Psychophysiological Effects of Applied Relaxation in Generalized Anxiety Disorder

Dissertation

der Fakultät für Informations- und Kognitionswissenschaften

der Eberhard-Karls-Universität Tübingen

zur Erlangung des Grades eines

Doktors der Naturwissenschaften

(Dr. rer. nat.)

vorgelegt von

Dipl.-Psych. Ansgar Conrad

aus Coesfeld

Palo Alto/USA

2006

Tag der mündlichen Qualifikation: 20.12.2006

Vorsitzender des Promotionsausschusses: Prof. Dr. Georg Carle

Mitglied des Promotionsausschusses: Prof. Dr. Martin Hautzinger

Mitglied des Promotionsausschusses: Prof. Dr. Walton Roth

Mitglied des Promotionsausschusses: PD Dr. Philip Brömer

Selbstständigkeitserklärung

Ich versichere hiermit, dass ich die vorliegende Arbeit selbstständig verfasst und keine anderen als die angegebenen Quellen oder Hilfsmittel benutzt habe.

_____

Ansgar Conrad

Palo Alto, im September 2006

Acknowledgements

This study was conducted at the Department of Psychiatry and Behavioral Sciences at the Stanford University School of Medicine and the Department of Veteran Affairs, Palo Alto Health Care System under the supervision of Walton T. Roth, M.D. I am grateful to Dr. Roth for giving me the opportunity to work in his research group and letting me profit from his expertise in the field of psychophysiology. Many thanks also to Linda Isaac, Eva Naumann, and Julia Altenburg for all their hard work in all phases of this project and their comments on prior versions of this manuscript. I could not have accomplished this project without the support of the student therapists of the Pacific Graduate School of Psychology - Stanford Consortium (Linda Sattler, Daniel Batiuchok, Lynda Vaterlaus, Danny Chenoweth). I would also like to thank my supervisor at the University of Tübingen, Prof. Dr. Martin Hautzinger, for supporting my intention to conduct research and write my Diplomarbeit (German equivalent to Master of Science degree thesis) and dissertation in collaboration with Stanford University.

A very big hug goes to my parents Gerhild and Manfred Conrad for all their love and support during my studies abroad. Finally, words alone cannot express the thanks I owe to Courtney Conrad, my wife, for her patience, forbearance, encouragement, and love.

This research was supported by grants of the National Institutes of Health (MH066953-01) and the Department of Veterans Affairs (ROT0042825) awarded to Dr. Roth.

Table of contents

Acronyms

ADIS-IV = Anxiety Interview Schedule for *DSM-IV*

ANCOVA = analysis of covariance

ANOVA = analysis of variance

AR = Applied Relaxation

AR1 = first-order autoregressive variance covariance structure with homogenous variances

BAI = Beck Anxiety Inventory

BDI = Beck Depression Inventory

BP = blood pressure

CBT = Cognitive-Behavior Therapy

CMQ = Customized Mood Questionnaire (s = short, l = long)

CSAQ = Cognitive and Somatic Anxiety Questionnaire (c = cognitive subscale, s = somatic subscale)

CT = Cognitive Therapy

EMG = surface electromyogram

ES = effect size

GAD = Generalized Anxiety Disorder

HR = heart rate

HRV = heart rate variability

MANOVA = multivariate analysis of variance

MRT = muscle relaxation therapy

NAC = non-anxious control

NSF = non-specific fluctuation

PD = Panic Disorder

PMR = Progressive Muscle Relaxation

PSS = Perceived Stress Scale

PSWQ = Penn State Worry Questionnaire

QS = quiet sitting segment of the Relaxation Test

R = relaxation segment of the Relaxation Test

RI = Relationship Inventory

RR = respiration rate

RRAQ = Reaction to Relaxation and Arousal Questionnaire

RRI = respiratory rate instability

SAD = Social Anxiety Disorder

SCL = skin conductance level

TV = tidal volume

TVI = tidal volume instability

WAI = Working Alliance Inventory

WLC = waiting list control

WW-II = Why Worry Scale II

List of Tables and Figures

Summary

Several authors have reported greater muscle tension in Generalized Anxiety Disorder (GAD) patients than in non-anxious controls, and muscle relaxation therapy (MRT) is as clinically effective in the treatment of GAD as Cognitive-Behavior Therapy. MRT assumes that GAD patients lack the ability to relax, but can learn this in therapy.

We tested these assumptions by recruiting 49 GAD patients and randomizing them to individualized 12-week Applied Relaxation (AR) treatment (Öst, 1987) or to a waiting list control (WLC) condition. Before, during, and after treatment participants underwent a Relaxation Test, in which for 5 min, in randomized order, they (a) just sat quietly (QS) and (b) sat quietly and tried to relax (R). The tests were preceded by a 2 min speaking period.

Before treatment, GAD patients were more anxious and worried during the laboratory assessment than non-anxious controls (n = 21), had higher heart rates and lower end-tidal pCO_2, but did not differ in multi-channel electromyographic recordings. QS and R did not differ in most psychological and physiological measures: Thus, before training the intention to relax did not speed relaxation. AR patients showed greater improvement than the WLC group at the end of treatment (Cohen's d = 0.24 - 1.13), and 53% of AR patients were considered significantly improved after treatment in the completer analysis. However, dropout rate was 28% for AR during treatment, and participants' improvement wore off at 6-week follow-up, leaving only 29% and 24% clinically improved in the completer and intention-to-

treat analyses, respectively. Before treatment, anxiety was not associated with electromyographic or autonomic measures within the GAD group, and there was little evidence in the psychometric and physiological data of the Relaxation Test suggesting that AR patients learned to relax in therapy or that a reduction in anxiety and worry was associated with a decrease in activation.

We conclude that GAD is not necessarily characterized by chronic muscle tension. AR is at most moderately effective in reducing anxiety and worry in GAD patients but does not affect muscle tension or autonomic functioning. Since effective cognitive-behavioral and pharmacological treatments are available, MRT may not be the best option for patients meeting *DSM-IV* GAD criteria, which have evolved to deemphasize hyperarousal symptoms and to emphasize intrusive worry.

Zusammenfassung

Verschiedene Studien dokumentieren erhöhte Muskelspannung bei Patienten mit der Diagnose Generalisierte Angststörung (GAS) und die Wirksamkeit der Progressiven Muskelentspannung (PME) bei GAS ist vergleichbar mit der der kognitiven Verhaltenstherapie. Annahmen der PME sind, dass GAS Patienten nicht die Fähigkeit besitzen, sich entspannen zu können, und diese in der Therapie erlernen.

In der vorliegenden Studie wurden diese Thesen untersucht. Wir randomisierten 49 GAS Patienten zu 12 wöchentlichen Stunden ambulanter Einzeltherapie (Angewandte Entspannung, AE, Öst, 1987) oder zu einer unbehandelten Kontrollgruppe. Wir testeten die Teilnehmer vor, während, und nach der Therapie mit einem Entspannungstest, bei dem die Teilnehmer instruiert wurden, in zufälliger Reihenfolge für 5 min (a) ruhig zu sitzen (RS) und (b) ruhig zu sitzen und sich zu entspannen (E). Vor jeder Bedingung wurden die Teilnehmer aufgefordert, einen 2 min langen Vortrag zu halten.

Während des Entspannungstests vor Beginn der Therapie beschrieben sich die GAS Patienten als ängstlicher und sorgenvoller als eine nicht-ängstliche Kontrollgruppe (n = 21) und wiesen eine erhöhte Herzfrequenz und einen reduzierten end-expiratorischen CO_2 Partialdruck auf. Die Gruppen unterschieden sich nicht in elektrischer Muskelaktivität, die in multiplen Kanälen gemessen wurde. Es zeigten sich keine Unterschiede zwischen RS und E in den meisten psychometrischen und physiologischen Kennwerten. Dies belegt, dass die Intention sich zu entspannen, Entspannung nicht schneller herbeiführt. AE führte zu einer bedeutsamen

Verbesserung gegenüber der unbehandelten Kontrollgruppe (Cohen's d = 0.24 - 1.13) und die Symptome von 53% der AE Patienten galten als klinisch relevant verbessert in der Completer Analyse. Allerdings brachen 28% der AE Patienten die Therapie ab und die erzielten Verbesserungen erwiesen sich in der Katamnese 6 Wochen nach Behandlungsende als nicht stabil. In der Nachuntersuchung galten die Verbesserungen von 29% in der Completer Analyse und 24% in der Intention-to-treat Analyse als klinisch relevant. Vor Beginn der Therapie waren Angstzustände innerhalb der GAS Patientengruppe nicht mit skelettmuskulärer Aktivität oder Kennwerten des autonomen Nervensystems assoziiert. Zudem fanden wir in den psychophysiologischen Daten des Relaxationstests nur wenige Indizien dafür, dass AE Patienten lernten sich zu entspannen, oder dass die Angstreduktion mit einer Reduktion der Aktivierung korrespondierte.

Zusammenfassend lässt sich sagen, dass die GAS nicht notwendigerweise durch chronisch erhöhte Muskelanspannung gekennzeichnet ist. Die Wirksamkeit der AE bei GAS kann höchstens als moderat beschrieben werden und hat keinen Einfluss auf die Skelettmuskulatur oder das autonome Nervensystem. Da es effektive kognitiv-behaviorale und pharmakologische Behandlungsalternativen gibt, sollte reevaluiert werden, ob AE für Patienten, die anhand von *DSM-IV* mit GAS diagnostiziert wurden, geeignet ist, besonders, da die gegenwärtigen Kriterien Symptome der Hyperaktivation weniger beachten und unkontrollierbare Sorgen stärker in den Vordergrund stellen als vorherige Auflagen.

Introduction

Muscle relaxation has been an important therapeutic technique in the modern treatment of anxiety disorders. Its origins lie with Edmund Jacobson (E. Jacobson, 1934a; 1934b; 1938; 1964; 1970), who developed Progressive Muscle Relaxation (PMR) based on the theory that a psychobiological state called *neuromuscular hypertension* is basis for a variety of negative emotional states and psychosomatic diseases (E. Jacobson, 1938). Jacobson asserted that relaxation of muscles would lead to relaxation of the mind, "because an emotional state fails to exist in the presence of complete relaxation of the peripheral parts involved" (E. Jacobson, 1938, p. 218). In other words, relaxation inhibits the generation of thoughts and emotions, and undoes the effects of neuromuscular hypertension on the body. Briefly, in PMR clients sit in a comfortable chair and the therapist instructs them in contracting and releasing different muscle groups. Clients practice tensing a muscle group until they recognize the feeling of even the slightest contraction, and then learn to release it. After they master relaxation while lying down, they are taught how to relax muscles in real-life situations, which requires *differential relaxation*, minimizing tension in the muscles needed for some activity while completely relaxing muscles not being used. Classical PMR was time-consuming. Jacobson (E. Jacobson, 1938) initially suggested 30 to 60 min treatments several times a week for up to more than a year.

Since then many abbreviated methods of PMR have been developed. These methods have been used either as complete treatments (e.g., Bernstein & Borkovec, 1973; Öst, 1987) or as one component among others in a treatment package (e.g., Wolpe, 1952a, 1952b, 1958). Several reviews and meta-analyses (e.g., Grawe,

Bernauer, & Donati, 1990; Hyman, Feldman, Harris, Levin, & Malloy, 1989; Jorm et al., 2004; King, 1980) attest to the clinical effectiveness of abbreviated muscle relaxation therapies (MRT)[1] for anxiety disorders, particularly Generalized Anxiety Disorder (GAD), Panic Disorder (PD), and Dental Phobia, but also other medical conditions, such as hypertension, headache, insomnia, and back pain. In a recent systematic, keyword-driven (*relaxation* AND *anxiety* OR *panic* OR *phobia*) search of the National Library of Medicine's database, PubMed, (Conrad & Roth, in press) we found five controlled studies published after the reviews cited above, which assessed the clinical outcome of MRT in anxious patients. The diagnostic groups were Dental Phobia (two studies), Social Anxiety Disorder (SAD), GAD, and PD. MRT resulted in equivalent or superior outcomes to Cognitive Therapy (CT) or Cognitive-Behavior Therapy (CBT) in four of the five studies.

In conclusion, a considerable number of published studies have succeeded in showing that muscle relaxation is beneficial in anxiety disorders and a variety of medical conditions. The more it is surprising that in the last decade many researchers and practitioners have turned their attention to other pharmacological or cognitive treatments for anxiety. Some recent researchers have even considered muscle relaxation to be no more than a "psychological placebo" (Greist et al., 2002; Marks et al., 2000; Marks et al., 1993; Park et al., 2001), useful solely to calibrate the superiority of other treatments. Barlow, Allen, and Choate (2004) described relaxation training that focuses on coping with distress as being counterproductive, and recently removed it from their CBT packages for GAD and PD.

[1] We define MRT as an abbreviated therapy based on Jacobson's original PMR, which included in its training procedure first tensing a muscle and then releasing that tension.

One reason for the recent disinterest in MRT for anxiety disorders may be the lack of a sound rationale. The basic therapeutic claim of MRT is that tense, stressed, and anxious people can find relief from their distress and its physiological accompaniments by learning to reduce muscle tension. A modern theoretical rationale for MRT is that an important element of psychological distress is elicitation of a generalized stress activation response, comprising multiple central and peripheral physiological systems (e.g., Öst, 1987) . Learning to deactivate a single subsystem, the muscular system, will reduce activation in many other subsystems (e.g., Gellhorn & Kiely, 1972). Is this rationale plausible?

First, MRT assumes the existence of a generalized stress activation response with some consistency within and between individuals. Activation of the physiological component of this response should generally be linked to another system of emotional expression – the cognitive-language system. Stress activation of the muscular physiological subsystem would be expected to be generalized, resulting in a surface electromyogram (EMG) intercorrelated at multiple sites. This assumption has often been challenged (Alexander, 1975; Fridlund, Cottam, & Fowler, 1982; Fridlund, Fowler, & Pritchard, 1980; Fridlund, Hatfield, Cottam, & Fowler, 1986; Shedivy & Kleinman, 1977). If generalized activation at all exists, it has to be captured through recordings from multiple muscles.

Furthermore, Lacey and colleagues (e.g., Lacey, Bateman, & Vanlehn, 1953; Lacey & Van, 1952) found in a series of experiments that the autonomic nervous system does not work as a single unit. Rather, subjects reacted to stressors with increases in some measures and decreases in others. He coined the term *relative*

response specificity, meaning that some individuals have a stereotyped response pattern to stress while others respond to stress with random patterns. If response patterns appeared repeatedly, the degree of activation of the different physiological measures varied significantly, but the rank order often remained the same.

Second, the rationale assumes that patients who can be treated successfully with MRT will initially have either more tonic muscle tension or exhibit increased muscle tension in response to stress than a non-distressed control group. This requires recruiting and testing a normal control group, since, unlike with psychological or clinical tests, the methods and procedures for muscle and autonomic tests are not standardized well enough for comparisons between studies. The tension should be greater at times when patients are having symptoms. For GAD this could be most of the time, as GAD is characterized by excessive worrying, which is more chronic than episodic. For PD the measurements ideally need to be made during attacks, which for natural attacks is technically difficult since ambulatory recording is necessary to capture them. The following paragraph reviews physiological studies of these two subgroups of anxious patients.

Tension of some kind and difficulty relaxing are implicit in the *DSM-IV* (American Psychiatric Association, 1994) definitions for GAD and PD. The criteria for GAD state that the patient may be *restlessness or feeling keyed up or on edge* and may experience *muscle tension* and *sleep disturbance*. Although one would expect that these criteria would entail vagal withdrawal and heightened sympathetic activation, tonically elevated blood pressure (BP), heart rate (HR), skin conductance level (SCL), or reduced heart rate variability (HRV) have not been consistently found

in GAD (Hoehn-Saric, 1982; Hoehn-Saric, Hazlett, & McLeod, 1993; Hoehn-Saric & McLeod, 1988; Hoehn-Saric, McLeod, & Zimmerli, 1989; Kollai & Kollai, 1992; Lyonfields, Borkovec, & Thayer, 1995; Thayer, Friedman, & Borkovec, 1996; Wilhelm, Trabert, & Roth, 2001). Borkovec, Alcaine, and Behar (2004) explained this from an evolutionary perspective: Sympathetic activation occurs during threat perception to elicit the fight or flight response. During worry however, there is no actual threat because worry is cognitive, deals with the future or past events, and anticipated outcomes are highly unlikely. Escape is not possible and as a result worrying individuals freeze (sympathetic inhibition, increased muscle tone). Research supports this theory in that muscle tone appears to be more sensitive than electrodermal or cardiovascular variables in distinguishing GAD patients from controls. Several studies have reported that GAD patients show elevated tone in the frontalis and gastrocnemius muscles at rest and during tasks (Hazlett, McLeod, & Hoehn-Saric, 1994; Hoehn-Saric, Hazlett, Pourmotabbed, & McLeod, 1997; Hoehn-Saric & Masek, 1981; Hoehn-Saric et al., 1989)[2]. Hoehn-Saric and McLeod (2000) suggested that GAD patients show *diminished physiological flexibility*, referring to lower physiological responsiveness to laboratory stressors and a delayed return to baseline levels upon the removal of the stressor in this group. Ambulatory data confirmed their hypothesis in that GAD patients showed less HR and SCL variance than non-anxious controls over the course of a day, accompanied by higher psychic and somatic anxiety symptoms (Hoehn-Saric, McLeod, Funderburk, & Kowalski, 2004).

[2] Hoehn-Saric and Masek (1981) classified their patients as chronically anxious, but later revised that diagnosis to GAD (Hoehn-Saric & McLeod, 1988).

The literature on physiological activation is more extensive for PD than for GAD. The *DSM-IV* definition of panic attacks lists many autonomic and respiratory symptoms. Panic patients have been reported to have elevated HRs and low frequency HRV at rest (H. Cohen et al., 2000; Holden & Barlow, 1986) and reduced interbeat interval and SCL variance throughout the day (Hoehn-Saric et al., 2004). Roth's group at Stanford University (Roth, Ehlers, Taylor, Margraf, & Agras, 1990; Roth et al., 1986; Roth, Wilhelm, & Trabert, 1998; Wilhelm, Gerlach, & Roth, 2001; Wilhelm, Trabert et al., 2001) found differences in end-tidal pCO_2, tidal volumes (TVs), respiratory rates (RRs), minute volume instability, and numbers of sighs between PD and non-anxious controls. Only one study (Hoehn-Saric, McLeod, & Zimmerli, 1991) found higher frontalis muscle tension in PD than non-anxious controls during a baseline but electromyographic reactivity to a stressor was not different between the groups.

None of the above studies that employed electromyographic recordings adequately addressed reports of electrical silence at rest (DeVries, 1965; Fridlund et al., 1982; Ralston & Libet, 1953), making therapeutic reduction of muscle tone impossible. Furthermore, if there is a resting tone, EMG magnitude may not be able to faithfully quantify it because EMG level varies with electrode placement, tissue noise, noise voltage, and dermal resistance (Fridlund et al., 1982; Mercer, Bezodis, Delion, Zachry, & Rubley, 2006). Moreover, experimental subjects, particularly anxious ones, may generate EMG artifacts by blinking or swallowing, which can be picked up as muscle tension in integrated records of the frontalis EMG. Upon repeated testing, the same subjects may show less of such artifact, which could be falsely interpreted as a reduction in muscle tension.

Third, the rationale assumes that muscle relaxation in the periphery results in a centrally mediated shift of the bodily system towards a trophotropic response because the reduction of the skeletal muscle tone "leads to a loss in ergotropic tone of the hypothalamus, a diminution of hypothalamic-cortical discharges, and, consequently, to a dominance of the trophotropic system through reciprocal innervation" (Gellhorn & Kiely, 1972, p. 404). Davison (1966) among others has criticized this theory as an oversimplification inconsistent with the fact that animals (e.g., Solomon & Turner, 1962) and humans (e.g., Smith, Brown, Toman, & Goodman, 1947) can evidence distress and fear under total curarization, where muscles are completely without tone. Furthermore, several biofeedback studies have demonstrated that EMG biofeedback training fails to affect autonomic parameters such as HR, SCL, respiration, and skin temperature (e.g., Burish, Hendrix, & Frost, 1981; J. G. Carlson, Basilio, & Heaukulani, 1983; Jones & Evans, 1981), arguing against general deactivation. In addition, Gellhorn and Kiely's explanation does not mention pathways by which central, cognitive events could affect relaxation, either directly or indirectly by influencing peripheral systems. It is even conceivable that relaxation could be experienced in the cognitive realm without any somatic accompaniment or at least without muscular relaxation. That thoughts influence feelings of tension or calmness hardly needs demonstration. A popular psychological paradigm is examining the effects of imagining fearful situations on a variety of cognitive and somatic measures (e.g., Cuthbert et al., 2003; Lang, Davis, & Ohman, 2000). In Cuthbert et al.'s (2003) study, Post-Traumatic Stress Disorder, PD, SAD, and phobia patients and non-anxious controls responded to tone cues signaling previously memorized neutral or fearful descriptor sentences. Participants were more reactive to fear than neutral stimuli in HR, SCL, and corrugator EMG.

Fourth, a reduction in muscle tension should cause the multiple aspects of the activation response - as well as expressions of emotion in non-physiological systems - to decrease. Anxiety, symptoms, and muscle tension should all be high before therapy and in successfully treated patients, all low afterwards. Changes in muscle tension and measures of anxiety before and after therapy should be positively correlated. Although correlation is not causation, a lack of correlation would indicate that muscle tension is neither a cause nor an effect of anxiety. At what times and under what circumstances these measurements should be made depends on how the therapy is conceptualized. If muscle relaxation is a skill under voluntary control, measurements should be made when the patients report that they are deliberately exercising that skill. The skill may be demonstrable when the patient is not having symptoms, but that does not guarantee that it can be applied when the person is frightened or worried, and whether application at that time would reduce symptoms. On the other hand, it is possible that muscle relaxation can become a persistent habit, which is constantly present or appears automatically when needed, and requires intentional effort to suppress. In any case, if anxiety is intermittent, observations restricted to non-anxious periods are inadequate to test this assumption.

Fifth, muscle relaxation should become faster or deeper with practice. Otherwise, muscle relaxation is less a specific skill that is learned in therapy than an innate or previously learned voluntary response that can be evoked fully with proper motivation and attention.

Sixth, MRT should produce a substantial reduction in the distress and functional impairment associated with at least some kinds of anxiety. In other words,

the treatment results in not just a statistically significant change in some psychological test of anxiety, but in at least a moderate overall improvement in the person's life (for a discussion on clinical significance, see N. S. Jacobson, Follette, & Revenstorf, 1984).

Many of the muscle-related assumptions have rarely been tested physiologically because researchers and therapists often have been tempted to rely on self-report to assess activation and muscle tension. This is problematic because number of studies have found no relationship between self-reported and physiologically measured tension (e.g., Katkin, Morell, & Goldbond, 1982; Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005; McLeod, Hoehn-Saric, & Stefan, 1986; Pennebaker, 1981, 1982; e.g., Shedivy & Kleinman, 1977; Tyrer, Lee, & Alexander, 1980).

Existing psychophysiological studies often cannot address the above questions convincingly because of their design or methodology. Physiological research on intentional muscle relaxation began with its founder, Edmund Jacobson (e.g., E. Jacobson, 1938), who asserted that training in his procedure led to decreases in EMG, BP, and HR. Unfortunately, from the standpoint of modern research methods, Jacobson's studies are deeply flawed (e.g., Mathews, 1971). For example, PMR training was not standardized, there were no waiting lists or placebo groups, results were not analyzed statistically, and *neuromuscular hypertension* is a poorly defined diagnosis, whose relationship to today's anxiety disorders is indeterminate. There is a vast and inconsistent literature on psychophysiological change with relaxation in healthy volunteers. Some studies suggest that MRT reduces general arousal. For

example, relaxation training is associated with a reduction in frontalis and semispinalis capitis EMG (Burish et al., 1981; Haynes, Moseley, & McGowan, 1975; O'Connell & Yeaton, 1981; Reinking & Kohl, 1975), RR and HR, (Christoph, Luborsky, Kron, & Fishman, 1978; Fee & Girdano, 1978; Paul, 1969) and SCL (Davidson & Hiebert, 1971; Schandler & Grings, 1976). However, other researchers failed to find psychophysiological effects of relaxation training in healthy participants (e.g., Borkovec, Grayson, & Cooper, 1978; Borkovec & Krogh-Sides, 1979; Bowles, Smith, & Parker, 1979; Connor, 1974; e.g., Hillenberg & Collins, 1983; Lohaus, Klein-Hessling, Vogele, & Kuhn-Hennighausen, 2001; Shapiro & Lehrer, 1980). Lehrer concluded based on a series of studies in his laboratory that brief MRT "does not appear to reveal measurable physiological effects among subjects who are not extraordinarily anxious" (Lehrer, Schoicket, Carrington, & Woolfolk, 1980, p. 300).

More central to this study are investigations that have both treated anxious patients and taken physiological measurements. Research in this area is scarce. In a recent review (Conrad & Roth, in press) we found fewer than 20 studies that investigated the physiological effects of MRT in patients with an anxiety disorder.[3] Some authors found no physiological evidence of change (e.g., J. G. Beck, Stanley, Baldwin, Deagle, & Averill, 1994; Leboeuf & Lodge, 1980), while many other studies were methodologically flawed by not testing subjects psychophysiologically before training (Mathews & Gelder, 1969), not measuring EMG activity (Jerremalm, Jansson, & Öst, 1986a, 1986b; Lehrer, 1978; Michelson, Mavissakalian, & Marchione, 1985; Michelson et al., 1990; Öst, Jerremalm, & Jansson, 1984; Öst,

[3] Physiological measurements are common in investigations of the effectiveness of exposure for specific phobia, where relaxation apparently can be a helpful adjunct. We briefly discussed recent well-designed specific phobia exposure studies in Conrad and Roth (in press).

Jerremalm, & Johansson, 1981; Öst, Johansson, & Jerremalm, 1982; Öst, Lindahl, Sterner, & Jerremalm, 1984; Öst, Sterner, & Fellenius, 1989) , not reporting how clinically important improvement was if it was found (Canter, Kondo, & Knott, 1975), using unstandardized diagnostic criteria (C. R. Carlson, Collins, Nitz, Sturgis, & Rogers, 1990; Lehrer, Woolfolk, Rooney, McCann, & Carrington, 1983), or providing a treatment package including multiple techniques (Barlow et al., 1984). In one of the few well designed studies, Miller (1978) recruited dental phobics for a comparison of the effects of frontalis EMG biofeedback, PMR, and a control therapy in which patients simply closed their eyes and tried to relax. Frontalis EMG measurements were collected just before dental work at an initial appointment, during each of the ten therapy sessions, and just before dental work at a second appointment. Results indicated linear trends of decreasing EMG activity with biofeedback and relaxation, but not for the control therapy, consistent with therapeutic reduction in psychological measures of state anxiety and dental fear. The design of this study is superior to many in employing a control therapy and measuring EMG at multiple training sessions so that the rate of progress could be observed. A limitation of the study is that EMG was measured at only one site.

Only one recent study of relaxation therapy in anxious patients conducted any kind of physiological assessment (Lundgren, Carlsson, & Berggren, 2006). Lundgren and colleagues measured HR, SCL, and frontalis EMG at baseline and during threatening situations (fearful video segments) in 127 dental phobics before and after eight weeks of treatment. Phobic patients were divided into subgroups based on the etiology of their fear and their psychophysiologic response style, and randomized to CT or MRT with frontalis EMG biofeedback. The treatments reduced dental fear, and

there were overall time effects for the three physiological measures. Unfortunately, the authors did not report if the type of treatment (CT versus MRT-biofeedback) moderated physiological improvement, but focused on the treatment by etiology and treatment by response style interactions. Neither of these interactions was significant.

The theoretical formulations and empirical findings reviewed above do not give satisfactory answers about the extent to which self-reported tension and inability to relax are related to muscle tension, or the extent to which learning to relax muscles is a reasonable and efficient way to overcome this self-reported tension. Clearly, the tension and distress of anxiety involve more than the muscular system. Generalized stress activation involves cognitions, and to some extent the cognitive, physiological, and action tendencies associated with this activation can vary independently. Furthermore, patterns of physiological activation may depend on the action tendencies associated with specific emotional reactions.

More recent alternate explanations of why muscle relaxation works are similar to other contemporary explanations of psychotherapeutic change and imply that MRT is a therapeutic detour. Any improvement by MRT is entirely cognitively mediated in that patients learn new ways of thinking about their problems, which gives them an increased sense of control. During the relaxation procedure, patients are exposed to frightening thoughts and somatic sensations, which gradually abate. Having weekly contact with a trained, licensed health care provider raises the patients' confidence that their difficulties are surmountable. If indeed muscle relaxation works more cognitively than physiologically, the therapist might do better by paying less attention to muscle tension and more to dysfunctional beliefs and attitudes. Nevertheless, it is

still possible that for certain clients, directing attention to muscle tension is more effective in changing those beliefs than trying to modify them directly. In any case, we should not give up on the muscle relaxation option too readily, since some patients are resistant to cognitive therapy rationales and procedures, and some find exposure protocols frightening to undertake. Medication may be helpful in some patients, yet it is often ineffective or contraindicated because of adverse side-effects.

One could question why it matters *how* muscle relaxation works, if it is already known that it *does* work. One answer is that if there is no empirical support for the rationale currently given to patients, the informed therapist can hardly communicate conviction when giving that rationale. Furthermore, knowledge about how the therapy works may make it possible to better predict which patients and which disorders will be benefited. It should guide selection of the parameters of the therapy. For example, how many sessions of what length are required? Perhaps the customary 12 sessions of therapy in Öst's Applied Relaxation (AR) treatment protocol (1987) are unnecessary because physiological improvement levels off after 2 sessions.

Can research help here? Although it may be impossible to prove that changes in cognition are causes rather than effects of changes in anxiety (Roth, Wilhelm, & Pettit, 2005), we can imagine research results that would rule out a causal effect of muscle relaxation. For example, MRT does not work as advertised if EMG levels are completely uncorrelated with improvement in subjective distress or if muscle relaxation does not really cause muscles to relax. Better tests of the above assumptions are possible with proper attention to experimental methodology and

design. Muscle tension and autonomic indicators of arousal need to be assessed before, during, and after MRT. Relaxation treatment protocols should be similar to those used successfully in recent clinical studies. Studies should use a randomized controlled design in which the treatment group is compared both to healthy controls and to a delayed or alternate therapy group. Technically adequate recording of multiple muscles is essential. Temporally parallel self-report and physiological measurements are necessary to answer questions about therapy mechanisms.

The purpose of the study reported here was to investigate and test the mechanisms of MRT in the treatment of anxiety disorders. More specifically, we aimed to investigate the psychophysiological effects of AR in GAD patients. We chose GAD as a treatment target for two reasons. First, the *DSM-IV* criteria of GAD include elevated muscle tension as a symptom. If MRT really works by reducing muscle tension, some degree of elevated muscle tension should be present at the start of therapy. Second, GAD is characterized by *chronic* excessive worrying and anxiety, which makes it more likely to capture the anxious state about which the patient is complaining in the consulting room and laboratory. This is not the case for patients with episodic anxiety such as PD, who may be quite calm when we interview and test them.

In accordance with the majority of recent psychophysiological GAD study results, we predicted that before treatment GAD patients would have significantly higher muscle tension but not more sympathetic activation than non-anxious controls. We hypothesized that before treatment, greater anxiety would be correlated with greater muscle tension within the GAD group. Based on a large number of successful

treatment outcome studies, we expected AR to lead to a clinically significant reduction of anxiety and worry compared to waiting. Finally, since it has usually been assumed that AR works by learning to relax muscles, we hypothesized a positive relationship in the treatment group between physiological indicators of the ability to relax and reduction of anxiety. During each physiological assessment, we distinguished between instructions to sit quietly and instructions to relax in order to investigate whether relaxation is a conscious skill or an automatic response to lack of challenge and activity.

Method

Inclusion Criteria

Participants were recruited by advertisements in the local media in the Peninsula and South Bay region of the San Francisco Bay Area. GAD patients were offered free psychological treatment for their participation in the study, while non-anxious controls (NACs) were offered $180 (or a fraction thereof if they did not complete all assessments). The patient group had to meet *DSM-IV* criteria for GAD at the time of interview, and the diagnosis had to be designated as the most important source of current distress. Patients had to be willing to undergo a 12-week treatment protocol with the possibility that treatment would be delayed because of randomization to a waiting group. Potential participants were excluded if they had a history of Bipolar Disorder, psychosis, or delusional disorders, had substance abuse or dependence (including tobacco) or alcohol abuse or dependence within the last year, had a serious medical illness for which hospitalization was likely within three months, or had a history of heart disease, diabetes, significant asthma, emphysema or any other diseases that might affect the physiological systems. Participants of the NAC group were to be psychiatrically and physically healthy, and to match the patient group in gender and age. Participants were not to have a history of relaxation or meditation practice, and were asked to keep their medication stable during the trial. For benzodiazepines, participants were included only if they took stable doses of less than 1.5 mg/day in the preceding month to the assessment.

Sample Size Considerations and Randomization Procedures

We chose our sample size to be adequate for testing the hypotheses that GAD patients would have greater muscle tension than non-anxious controls at pre-treatment, and that treatment would lead to a greater reduction in anxiety than waiting.

Past studies most commonly have assessed frontalis muscle tension as the indicator of electromyographic differences between GAD patients and non-anxious controls (Hazlett et al., 1994; Hoehn-Saric et al., 1997; Hoehn-Saric & Masek, 1981; Hoehn-Saric et al., 1989). We assumed that the difference between our groups would be 6.20 μV, the mean difference between groups of the former studies.[4] Following these studies, we assumed that the standard deviation in both GAD patients and controls would be 2.77 μV. Based on Kraemer and Thiemann's (1988) calculations for sample sizes in two group comparisons, the optimal sample size to detect this difference with a two-sided significance level of $p = .05$ and with 90% power is 15 subjects in each group.

We did not have information on the difference in change in worry between patients who were randomized to AR or waiting list control (WLC), because recent GAD outcome studies (Borkovec & Costello, 1993; Öst & Breitholtz, 2000)[5] compared the effects of AR to other active treatments, such as CBT or CT. Hence, we

[4] We did not include Hoehn-Saric and Masek's study (1981) in this analysis, because the authors computed frontalis EMG in μV-min. The other studies and the present investigation measured EMG in μV.

[5] We did not include Borkovec et al. (2002) in this analysis because the authors had combined AR with self-control desensitization.

calculated the mean difference in worry as measured by the Penn State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990) from pre- to post-treatment in patients who received AR in those studies. The estimated mean difference was 10.44 with a standard deviation of 9.93. Using the same parameters for significance level and estimated power as above, the suggested sample size to detect such difference is 16 subjects.

Based on these calculations and the assumption that we might lose up to 20% of the subjects during the study, we decided to recruit 40 GAD patients and 20 non-anxious controls. However, we committed to recruiting new participants until the sample size for each group at post-treatment was at least 15 and the groups were balanced for age and gender. For the GAD versus NAC analysis the participant ratio was 2:1, so that we had the same number of AR, WLC, and NAC participants. The GAD patients admitted into the study were randomly allocated to the AR or WLC condition in a 1:1 ratio based on a computerized random number generator. Randomization was constrained in that participants were stratified to match in age and gender if preliminary analyses indicated an imbalance.

Participant Characteristics

Two hundred and five people made inquiries about the study and completed the phone-screen. Sixty-five were interested but not eligible and 61 decided not to participate. Of the 79 individuals who participated in the initial assessment, 9 did not meet study criteria. Forty-nine patients with GAD and 21 non-anxious controls were

finally entered into the study. As noted in Table 1, groups were successfully selected to not differ in age, gender, body mass, or fitness level and interest. The groups did

Table 1

Demographic Characteristics by Group

	GAD (*n* = 49)	NAC (*n* = 21)	χ^2, *t*, or *z* [a]	*p*
Women	57%	62%	χ^2 = 0.14	*p* = .71
Age (years)	45.31 (11.10)	43.05 (13.48)	*t* = 0.73	*p* = .47
BMI	26.42 (4.82)	25.17 (3.97)	*t* = 1.02	*p* = .31
Fitness level (1 – 4) [b]	3.00 (1.00, 4.00)	3.00 (2.00, 4.00)	*z* = -1.18	*p* = .24
Fitness interest (0 – 4) [c]	3.00 (1.50, 3.00)	3.00 (2.00, 4.00)	*z* = -1.51	*p* = .13
Ethnicity				
Hispanic	4%	10%	χ^2 = 0.81	*p* = .37
Race				
Caucasian	84%	57%	χ^2 = 7.25	*p* = .12
African-American	2%	10%		
Asian	10%	29%		
American Indian or Alaska Native	2%	5%		
Native Hawaiian or Other Pacific Islander	2%	0%		

Note. Values are expressed as percentage, mean (SD), or median (25th percentile, 75th percentile). GAD = Generalized Anxiety Disorder; NAC = non-anxious control; BMI = Body Mass Index.

[a] χ^2 (1, *N* = 70) from contingency tables. *t* values from independent-samples *t*–tests, denominators for *df* vary from 66 to 68 depending on the analysis. *z* values from Mann-Whitney *U*-tests. [b] 1 = not very active, 2 = weekend or vacation exerciser, 3 = active 1 to 2 times during week, 4 = active 3 or more times during week. [c] 0 = hate it, 2 = neutral, 4 = love it.

not differ in ethnicity or race. Fifty-nine percent of GAD patients and 38% of non-anxious controls were taking medication and often had more than one prescription. Twenty percent of GAD patients were taking anxiolytics (8, benzodiazepines; 4, buspirone; 2, zolpidem) and 20% of patients had prescriptions of antidepressants (8, selective serotonin reuptake inhibitors; 2, bupropion; 1, trazadone). Thyroid medication was taken by 10% of GAD patients and 10% of non-anxious controls. Ten percent of GAD patients and 14% of non-anxious controls were taking lipid-lowering agents. Anti-hypertensives were taken by 20% of GAD patients and 19% of non-anxious controls. Cardiovascular data of 8% of GAD patients and 5% of non-anxious controls were excluded because they took beta-blockers. Twelve percent of GAD patients were excluded from the skin conductance analysis because they took antihistamines. Sixty-five percent of GAD patients had additional *DSM-IV* diagnoses (16, SAD; 8, Specific Phobia; 5, PD with Agoraphobia; 3, PD without Agoraphobia; 1, Post-Traumatic Stress Disorder; 7, Major Depressive Disorder; 4, Dysthymia; 1, Hypochondriasis).

There were no differences between AR and WLC groups in gender, age, ethnicity, race, body mass index, fitness level or interest, or medication.

Attrition

Of the 49 GAD patients admitted into the study, 5 participants decided not to participate after the pre-treatment assessment because they found the repeated psychophysiological evaluations too time-consuming and boring. The participants did not know their randomization at the time of discontinuation. (Two participants were

randomized to AR, three to WLC.) One non-anxious control declined participation after the first laboratory visit for the same reason.

Over the course of the 12-week intervention, eight AR participants (28%) dropped out of the study. Four of them dropped out in the early stages of treatment (between Session 1 and 4) because they were not persuaded by the rationale of the treatment or lost interest. One participant had presented GAD symptomatology during the assessment, but his chief complaint during treatment was social anxiety. He was referred to another clinic after two sessions. One participant was only seen five times because he did not keep his weekly study appointments. Two participants stopped after seven sessions, one because she provided care for her husband whose situation had worsened, and the other for unknown reasons. Two WLC participants (10%) dropped out of the waiting condition after the second and fourth physiological assessment because they lost interest. One NAC participant (5%) started a new job and was unable to continue after the second physiological assessment.

One AR participant declined to undergo any further psychophysiological assessments after the completion of therapy, and three AR patients could not be reached for the follow-up assessment.

There were no differences between GAD completers and dropouts in gender, age, ethnicity, race, or medication. However, GAD dropouts had significantly higher body mass indices, $t(46) = -2.24$, $p = .03$, and lower fitness levels, $z = -2.12$, $p = .03$, although the self-reported interest in fitness was not different between groups.

Procedure

Stanford University and VA Palo Alto Health Care System Institutional Review Boards granted study approval, and participants provided informed consent. At the initial visit, participants underwent a structured diagnostic interview, were tested physiologically with the Relaxation Test (see below) and completed questionnaires. Next, GAD patients were randomized to weekly relaxation therapy sessions for 12 weeks (AR) or the waiting condition (WLC). The AR group completed the Relaxation Test and questionnaires before Session 2, Session 5, Session 10, one week after Session 12, and seven weeks after Session 12 (6-week follow-up). The WLC group completed the first five Relaxation Tests and questionnaires at corresponding times, and then began AR.

Treatment

Applied Relaxation

The reader is referred to Öst (1987) for a detailed description of Applied Relaxation. In brief, AR is a therapy protocol that teaches clients to recognize anxiety early and to cope with it rather than being overwhelmed by it. For this study, therapy was standardized, consisting of 12 weekly sessions lasting for 50 to 60 min and homework. Patients were treated individually. In Session 1, the therapist explained the treatment rationale and gave homework assignments to self-observe and record early anxiety signals. The relaxation training started with the classic tension–release cycles in Session 2 and 3, but in Session 4, the therapist changed the instruction to do only the release part of the cycle. In Session 5, the therapist introduced cue-controlled

relaxation, which links the self-instruction to relax and the state of being relaxed by conditioning. In Sessions 6 and 7, the client practiced relaxing in different situations without tensing muscles not used for posture or movement at the particular moment (differential relaxation). Rapid relaxation was taught in Session 8 with the goal of reducing the time taken to relax to 20 to 30 sec. Session 9 was used for a review of all techniques, before the therapist moved on to *in vivo* and *in sensu* application training in Session 10 and 11. Finally, Session 12 completed the treatment with maintenance instructions. Each therapy session was audiotaped for quality assurance.

Because therapy components build on each other, therapists were instructed not to skip over the contents of missed sessions but to combine the content of the missed session with that of the following session in order to remain on schedule. Sessions with a physiological assessment scheduled before them (Session 2, 5, 10) were exceptions in that after Session 1, 4, and 9 there had to be at least one week of practice before assessment took place.

Therapists

Six clinical psychology graduate students (four women, two men) conducted the therapy. Before seeing clients, all therapists underwent structured training by the author, which included reviewing and discussing the plan of each session with the help of a detailed therapist manual by Lars-Göran Öst, role-playing, and listening to therapy tapes. During the recruitment and treatment phases of the study, weekly meetings were held to present and discuss each case in detail, provide supervision, and check adherence to protocol. Clients were randomized to therapists. Patient load

varied among therapists: The female graduate students saw 1, 2, 5, and 7 clients, and the male 2 and 10 clients.

Integrity Checking

An advanced clinical psychology graduate student listened to 17% of the therapy audiotapes (two tapes for each client randomly selected from Session 1 to 6 and Session 7 to 12) to assure that therapists followed the treatment manual. For each tape the student listened to the entire session and marked every therapist statement against a checklist of allowed and not allowed interventions. Therapeutic methods not to be used included cognitive techniques (e.g., logical analysis, decatastophizing, generation of alternative thoughts and beliefs), behavioral techniques (e.g., contingency contracting, reinforcement scheduling), person-centered therapy (e.g., congruence, unconditional positive regard, empathy, active listening, self-actualization), psychodynamic techniques (e.g., free association, dream analysis, transference, self-psychology), or systemic approaches (e.g., explaining mood and behavior in terms of ones role in the childhood and current family). Like Borkovec and colleagues (2002), a minor break was defined as one or two statements that were inappropriate for AR. A major break was more than two statements. Treatment deviations in this study were minimal, resulting in three minor and no major breaks. In the first break, a therapist responded to the patient's interest in psychodynamic theory and treatment. In the second, a therapist explained behavior in terms of family systems. In the third, a therapist responded to a patient's question about irrational beliefs by saying that they could be a trigger for tension.

Psychological Assessment

Diagnostic Interview

We employed a structured interview, the *Anxiety Interview Schedule for DSM-IV: Adult Version (ADIS-IV)* (DiNardo, Brown, & Barlow, 1994), to diagnose current episodes of anxiety, mood, somatoform, and substance use disorders. The ADIS-IV also contains screening questions for psychotic and conversion symptoms and for familial psychiatric history. Except for Axis II disorders, the ADIS-IV permits the use of the *DSM-IV* multi-axial system. The ADIS-IV was administered by the author or by trained clinical psychology graduate students. All interviews were audiotaped. A veteran psychiatrist and Stanford University professor (Walton T. Roth) served to control the quality of the interviews.

Treatment Outcome Questionnaires

Participants completed the following questionnaires after each Relaxation Test with the instruction to consider how typical the symptoms were for them during their past week including the day of the assessment. The AR group completed the short version of the Customized Mood Questionnaire also before each therapy session. The reader is referred to the original articles or practitioners' guides of anxiety and depression questionnaires (Anthony, Orsillo, & Roemer, 2001; Nezu, Ronan, Meadows, & McClure, 2000) for more detailed information.

Customized Mood Questionnaire - short (CMQ-s): The CMQ-s consists of three items (anxiety, worry, relaxation) rated from 0 to 10.

Beck Anxiety Inventory (BAI) (A. T. Beck, Epstein, Brown, & Steer, 1988): The BAI is a 21-item instrument to measure anxiety on a scale from 0 to 3. Possible scores range from 0 to 63 with higher scores indicating higher anxiety. The BAI was specifically designed to discriminate anxiety from depression.

Penn State Worry Questionnaire (PSWQ) (Meyer et al., 1990): The PSWQ is a 16-item questionnaire assessing the excessiveness of worry on a scale from 1 to 5. Possible scores range from 16 to 80 with higher scores reflecting higher levels of worry.

Perceived Stress Scale (PSS) (S. Cohen, Kamarck, & Mermelstein, 1983): The PSS measures global perception of stress. The short version is comprised of ten 5-point Likert-type items from 0 to 4. Scores range from 0 to 40 with higher scores indicating higher levels of perceived stress.

In addition, participants completed the subsequent questionnaires after the Relaxation Test during the initial, post-treatment and, follow-up assessments.

Beck Depression Inventory (BDI) (A. T. Beck, Ward, Mendelson, Mock, & Erbaugh, 1961): The BDI is the most widely used self-report instrument to measure depression. The BDI consists of 21 questions rated from 0 to 3. Scores range from 0 to 63 with higher scores indicating higher levels of depression. It can be completed in about 5 min.

Cognitive and Somatic Anxiety Questionnaire (CSAQ) (Schwartz, Davidson, & Goleman, 2000): The CSAQ is a 14-item instrument to measure anxiety on a scale from 1 to 5. It is comprised of two subscales to assess the *cognitive* and *somatic* components of anxiety (seven items each). Subscale scores range from 7 to 35 and the total score from 14 to 70 with higher scores indicating higher anxiety. This study considered the scores on both subscales.

Reaction to Relaxation and Arousal Questionnaire (RRAQ) (Heide & Borkovec, 1984). The brief version of the RRAQ consists of nine items scaled from 1 to 5, and assesses whether reactions such as apprehension or nervousness occur during periods of relaxation. Scores range from 9 to 45 with higher scores indicating more adverse reactions to relaxation exercises.

Why Worry Scale II (WW-II) (Freeston, Rheaume, Letarte, Dugas, & Ladouceur, 1994): The WW-II is a 25-item instrument assessing why people worry. Items are rated on a scale from 1 to 5, and allocated to five 5-item subscales (worrying aids in problem-solving, worrying motivates, worrying protects from negative emotion in the event of a negative outcome, worrying prevents negative outcomes, worrying is a positive personality trait). Subscale scores range from 5 to 25 and the total score from 25 to 125, with higher scores indicating more frequent cognitions underlying worry. Our analysis focused on the total score, exploring the subscales only for descriptive purposes.

Relaxation Test Questionnaires

Several times during the Relaxation Test, participants completed a longer *Customized Mood Questionnaire (CMQ-l)* to assess their current state during different parts of the test. The CMQ-l consists of eight items, three primary outcome measures (anxiety, worry, relaxation) and five secondary outcome measures (boredom, distress, pleasantness, sadness, sleepiness) rated from 0 to 10.

Therapeutic Quality Measures

Before completion of any of the therapeutic quality measures, clients were informed that the forms would be sealed upon completion and never seen by their therapist. Clients completed a credibility scale comprised of four individual 10-point Likert-type items from 0 to 9 and a 0 to 100% expectancy of improvement scale (Borkovec & Nau, 1972) at the end of the first therapy session. The following questionnaires were completed by the patient and therapist after Session 1, 4, 8, and 12.

Relationship Inventory (RI) (Barrett-Lennard, 1986): The therapist and client short versions of the RI consist of 40 items rated from -3 to +3. Items are summarized in four subscales (*level of regard*, *empathy*, *unconditionality*, *congruence*; 10 items each) to describe the clients' perceptions of the therapists and the therapists' perceptions on how they relate with the clients. Each subscale ranged from -30 to +30 with higher scores indicating a better relationship.

Working Alliance Inventory – Short Form (WAI) (Horvath & Greenberg, 1989): The therapist and client versions of the WAI are 12-item instruments designed

to measure the agreement on the *task*s and *goals* of the treatment as well as the *bond* between patients and therapists. Each item is scaled from 1 to 7 and each subscale ranges from 4 to 28 with higher scores indicating a better working alliance.

Physiological Assessment

Relaxation Test

For the Relaxation Test, subjects reported to our laboratory. Subjects sat upright in a comfortable chair in a large, sound-attenuated, temperature-controlled, and well-lit room. The experimenter observed the subjects through a one-way mirror and communicated with them via intercom. After the attachment of sensors, participants completed a respiration calibration procedure. Subjects plugged their nose, and completely inflated and deflated an 800 ml plastic bag fitted with a mouthpiece eight times. Next, participants were asked to speak for 2 min and to relax for 5 min (speech – relax, R) and to speak for 2 min and to sit quietly for 5 min (speech – quiet sitting, QS) in randomized order. During the speech segments, participants were asked to speak on two non-threatening topics in randomized order. The topics were to give directions from their home to the laboratory and to describe their last meal. Participants completed the CMQ-l several times during the Relaxation Test, reporting how they felt during the speeches and at the beginning, during, and at the end of R and QS.

Physiological Measures

Multiple channels of physiological data were recorded with the Biopac MP150 system (Biopac Systems Inc., Goleta, CA).

1. Movement was recorded at 125 Hz with a tri-axial accelerometer that was placed underneath the seat cushion of the subjects' chair. The accelerometer was calibrated to measure units of gravity.

2. Surface EMGs were recorded at 1 KHz at six sites. Sensors were positioned over the lateral heads of the gastrocnemius muscles of the left and right leg, over the forearm flexors (flexor carpi radialis and flexor digitorum sublimis) of the left and right arm, and over the upper trapezius muscles and lateralis frontalis muscles on the nondominant side. Electrode placement followed standard conventions (Andreassi, 2000; Basmajian, Blumenstein, & Dismatsek, 1980; Fridlund & Cacioppo, 1986). For the frontalis muscles, small reusable shielded silver-silver chloride electrodes (EL254S, Biopac Systems, Inc., Goleta, CA) with a circular contact area of 4 mm diameter with double-sided adhesive collars (ADD204) and highly conductive electrolyte (GEL100) were used. The electrodes were placed 15 mm apart along the axis of the muscles. For the other five sites, disposable electrodes with a circular contact area of 1 cm diameter pre-gelled with the same electrolyte (EL503) were used. Electrodes were placed 4 cm apart along the axis of the muscles. Before attachment of the electrodes, the skin was abraded to reduce high contact impedance and tested with an impedance meter (Checktrode 1089 mk III, UFI, Moro Bay, CA). Electrode impedance was required to be less than 10 KΩ.

3. Skin conductance was recorded at 125 Hz with the constant voltage technique from two electrodes placed at the palmar surface of the middle phalanges of Digits 2 and 3 of the nondominant hand. Disposable electrodes with a circular contact area of 1 cm diameter pre-filled with isotonic gel (EL507) were used. If needed,

additional isotonic gel (Gel 101) was applied to the center of the electrode. Participants were asked to wash their hands with non-antibacterial soap in preparation for the application of skin conductance electrodes. The time difference between attachment and recording was at least 20 min.

4. Expiratory pCO_2 was measured continuously by a calibrated infrared capnograph into which air was drawn with a flow rate of 150 ml/min through a 1.2 mm diameter plastic tube ending in a disposable dual nostril prong. A Puritan-Bennett/Datex CO_2 monitor (Puritan-Bennett Corporation, Los Angeles, CA) was used during the first 31 Relaxation Tests. All other physiological assessments employed a Nellcor capnograph (N-1000, Nellcor, Hayward, CA). The pCO_2 waveform was input to the MP system via a universal interface module and sampled at 125 Hz.

5. Respiratory patterns were estimated using a thoracic bellow (Lafayette Instrument, Inc., Lafayette, IN) connected to a pneumographic transducer (James Long Company, Inc., Caroga Lake, NY). The waveform was input to the MP system via a universal interface module and sampled at 125 Hz.

6. An electrocardiogram was recorded at 250 Hz from two disposable electrodes with a circular contact area of 1 cm diameter pre-gelled with highly conductive electrolyte (EL503). Electrodes were placed below the left and right collarbone. Prior to electrode attachment, participants' skin was prepared like for the EMG.

Physiological Data Reduction

Physiological signals were analyzed offline and averaged for 1-min periods using an integrated suite of biosignal analysis programs written by the author in MATLAB 7.0 (Mathworks, Inc., Natick, MA). Some details of the analysis are these:

1. Accelerometer signals were resampled at 10 Hz. Motion was defined as the root mean square value of the absolute first derivative of the resampled data of the x, y, and z axes across a 1-sec period.

2. EMG signals were band-pass filtered from 20 to 500 Hz. Muscle activity was defined as the root mean square of the absolute filtered data across a 1-sec period. Movement artifacts were defined as values two standard deviations higher than the mean of the segment and were replaced by linearly interpolated values.

3. Skin conductance was resampled to 4 Hz and averaged across 1-sec segments after movement artifacts had been edited out. Non-specific fluctuations (NSFs) were defined as amplitude differences exceeding 0.02 μS between consecutive zero slopes (Vossel & Zimmer, 1990).

4. End-tidal pCO_2 was determined from the capnometry signal as the level at which pCO_2 stopped rising at the end of an expiration (final maximum). Expirations in which the pCO_2 waveform did not reach a distinct plateau were deleted and replaced by linearly interpolated values. The criterion for a distinct plateau was that in the last 0.25 sec of expiration values could not be more than 3 mmHg less than the final maximum.

5. TV was calculated as the amplitude difference between peaks and valleys of valid breaths. This was calibrated in ml using data from the inflations and deflation of the fixed volume plastic bag. RR was expressed in breaths per minute. Root mean square successive differences of respiratory rate and depth were computed as indicators of instability (respiratory rate instability [RRI], tidal volume instability [TVI]).

6. HR was calculated by automatic detection of R-waves followed by the calculation of successive heart periods. Artifacts in the signal were edited by inspecting the electrocardiogram data stream on a beat-by-beat basis: R-waves that had been missed by the detection algorithm were marked, and falsely detected R-waves were deleted. Respiratory sinus arrhythmia adjusted for confounds of respiratory rate and depth (RSA_{TF}) was calculated from the transfer function based on the quotient of the cross-spectral density of heart period and lung volume and the power spectral density of lung volume at the at the peak respiratory frequency (Saul et al., 1991). RSA_{TF} data were excluded if spectral coherence between TV- and RR-interval was below 0.5, because less coherence would indicate sources for RR-interval variation other than respiration (Rottenberg, Wilhelm, Gross, & Gotlib, 2002).

Statistical Analysis

Following the recommendation of Bagiella, Sloan, and Heitjan (2000) for analyzing psychophysiological data, mixed-effects models fitted by maximum likelihood and assuming first-order autoregressive variance covariance structures with homogenous variances (AR1) were used to examine potential main effects or

interactions in any psychological or physiological variables that were tested repeatedly. Factors were entered as fixed effects, and each analysis was conducted for both the completer and the intention-to-treat groups. For the intention-to-treat analyses, the last observed values were carried forward for dropouts.

To minimize alpha inflation in the analyses involving multiple measures (treatment outcome, Relaxation Test, correlational analyses), a small number of variables for those tests were considered to be the primary measures for testing our hypotheses, and all other psychophysiological variables, secondary. The CMQ-s, BAI, PSWQ, and PSS served as primary measures for self-reported outcome. For the Relaxation Test, three items of the CMQ-l (anxiety, worry, relaxation) were considered primary measures for the psychometric assessment, while of the physiological recordings the six electromyographic sites were considered primary. In the correlational analyses, only tests involving EMG were considered primary.

Demographic, Clinical, and Control Measures

Study participants were compared on several demographic, clinical, and control variables. Continuous measures were evaluated with independent-sample *t*-tests. Differences in categorical variables were tested with Mann-Whitney *U*-tests or with χ^2 tests, depending on whether categories were ordered.

Pre-Treatment Measures

First, GAD patients and non-anxious controls were compared on the clinical outcome measures with independent-samples *t*-tests. Next, the psychophysiological data of the Relaxation Tests were analyzed. The speech segments were intended to be

benchmarks of moderate activation. The assumption that activation in the two groups was the same during the speech segments was tested with Group (GAD, NAC) x Condition (QS, R) mixed-effects models on individual items of the CMQ-l, and Group x Time[6] (min 1 before speech, min 1, 2 during speech) x Condition mixed-effects models on the physiological data. Respiratory and electromyographic data were excluded because they are confounded by speaking and movement and therefore unreliable. Group differences during R and QS were analyzed with mixed-effects models with the factors group, time (min 1, 2, 3, 4, 5 for the physiological data; 'at the beginning', 'during', 'at the end' for the CMQ-l), and condition.

Treatment Outcome Measures

Treatment outcome was evaluated with Group (AR, WLC) x Progress (pre-treatment, before session 2, 5, 10, post-treatment) mixed-effects models on the self-reported outcome measures. Clinically significant improvement was defined using one of Jacobson and colleagues' criteria (N. S. Jacobson et al., 1984): In order to be considered clinically improved, patients' self-report on the primary outcome measures had to fall within the range of the non-anxious controls' means +/- 2 standard deviations.

Treatment Expectancy and Therapeutic Relationship Measures

Each of the subscales of the RI and the WAI administered at the end of Session 1, 4, 8, and 12 was analyzed using one-way repeated-measures mixed-effects model analyses conducted separately for AR participants and therapists.

[6] In the following, we use *time* as a variable characterizing different minutes of the Relaxation Test and *progress* as a variable characterizing the different Relaxation Tests or therapy sessions.

Physiological Change with Treatment

The psychometric and physiological data of the speech, R, and QS segments of the Relaxation Tests were evaluated analogously to the pre-treatment analysis of the laboratory data. For the speech segments, psychometric data were analyzed with Group (AR, WLC) x Condition (QS, R) x Progress (pre-treatment, before session 2, 5, 10, post-treatment) mixed-effects models. The QS and R conditions were analyzed by group, time (at the beginning, during, at the end), condition, and progress. Physiological data were analyzed with mixed-effects models with the factors group, time (for speech: min 1 before speech, min 1, 2 during speech; for QS and R: min 1, 2, 3, 4, 5), condition, and progress.

Follow-Up Outcome and Physiological Change

Endstate functioning at 6-week follow-up was evaluated for the AR group with one-way repeated-measures (pre-treatment, before session 2, 5, 10, post-treatment, follow-up) mixed-effects models on the psychometric outcome measures. Clinically significant improvement at follow-up was evaluated using the same criteria as for the post-treatment assessment. Mixed-effects models with the factors time (for speech: min 1 before speech, min 1, 2 during speech; for QS and R conditions: min 1, 2, 3, 4, 5), condition (QS, R), and progress (pre-treatment, before session 2, 5, 10, post-treatment, follow-up) were computed for the physiological data of the Relaxation Test, while the psychometric data was analyzed with mixed-effects models with the factors condition and progress for speech, and time (at the beginning, during, at the end), condition, and progress for the QS and R segments. For all follow-up analyses, significant main or interaction effects for progress were followed up with repeated-

measures mixed-effects models (time, condition, progress, depending on the dependent variable) of the data at post-treatment and follow-up.

Correlational Analyses

The associations between physiological and psychic activation within pre-treatment GAD and change of activation with treatment in the AR group were assessed with Spearman's rank correlations[7]. Subject-specific slopes and centered intercepts (for a discussion on the importance of centered intercepts in regression see Kraemer & Blasey, 2004) were computed separately for the QS and R segments of three psychometric (anxiety, relaxation, worry of the CMQ-l) and all physiological measures for the pre-treatment, post-treatment, and follow-up Relaxation Tests. For pre-treatment, bivariate correlations of the items of the CMQ-s (anxiety, worry, and relaxation) and the centered intercepts of the same items during the Relaxation Test with the centered intercepts of the physiological data during the Relaxation Test were computed for the QS and R segments.

To evaluate physiological change with treatment, change scores were established by subtracting post-treatment or follow-up values from the pre-treatment values. Each Relaxation Test measure had eight values, because change scores were calculated separately for intercepts and slopes, QS and R, and the pre-treatment/post-treatment and pre-treatment/follow-up comparisons. Similarly, change scores for the items of the CMQ-s were computed by subtracting post-treatment or follow-up values from the pre-treatment scores. The change scores of the six psychometric measures

[7] We chose the nonparametric equivalent to Pearson's Product Moment Correlation because we expected some of our data to contain outliers or to be not normally distributed, which confounds Pearson's coefficient.

(CMS-s items from the pre-treatment questionnaires and the Relaxation Test) were correlated with the change scores of the physiological measures. Eight correlation analyses were performed to investigate the associations between psychometric and physiological variables as measured by slopes and intercepts, during QS and R, and by comparing pre-treatment to post-treatment and follow-up.

Effect Size Calculations and Adjustments for Multiple Tests

When appropriate, effect sizes (ESs) were calculated as Cohen's *d* (J. Cohen, 1988). For Group x Progress comparisons, subject-specific difference scores (e.g., pre- versus post-treatment) were computed. Then, the means and standard deviations of the differences were calculated per group and entered into Cohen's equation ($d = M_{\text{Group A}} - M_{\text{Group B}} / SD_{\text{pooled}}$). The criterion for statistical significance was $p \leq .05$, two-tailed. To reduce the possibility of Type I error in the analyses involving multiple outcome measures, the alpha level for the treatment outcome, Relaxation Test, and correlational analyses depended on the type of measure. For primary measures, the significance level was $p \leq .05$, two-tailed, for the secondary measures the probability was set at $p < .01$, two-tailed. SPSS 13.0 (SPSS Inc., Chicago, IL) was used for all computations.

Results

Pre-Treatment Differences Between GAD Patients and Non-Anxious Controls

During the week before the first assessment, GAD patients rated significantly higher on cognitive and somatic anxiety, worry, perceived stress, and depression than non-anxious controls. In addition, GAD patients were less relaxed and reacted more adverse to relaxation. Higher scores on the Why Worry Scale indicated that GAD patients accepted worrying as an important cognitive strategy more than did the non-anxious controls. Subscale scores were consistently higher in the GAD than the NAC group. The complete results of the corresponding independent-samples *t*-tests and the corresponding numbers, means, and standard deviations are presented in the appendix, and the statistics are summarized in Table 2.

During the speech segment of the first Relaxation Test, GAD patients were more anxious, $F(1, 70) = 22.10$, $p < .001$, distressed, $F(1, 70) = 16.62$, $p < .001$, sad, $F(1, 70) = 10.00$, $p = .002$, and worried, $F(1, 70) = 23.56$, $p < .001$, and less relaxed, $F(1, 70) = 7.65$, $p = .007$, than non-anxious controls. There were no differences between groups in boredom, pleasantness, and sleepiness. During QS and R segments, GAD patients were more anxious, $F(1, 74.28) = 26.91$, $p < .001$, distressed, $F(1, 74.97) = 12.01$, $p = .001$, sad, $F(1, 73.07) = 10.50$, $p < .001$, sleepy, $F(1, 77.75) = 7.15$, $p = .009$, and worried, $F(1, 73.76) = 24.95$, $p < .001$, and felt less pleasant, $F(1, 75.86) = 9.32$, $p < .001$, or relaxed, $F(1, 75.60) = 13.82$, $p < .001$. Relaxation, $F(2, 309.79) = 3.15$, $p = .04$, boredom, $F(2, 312.88) = 5.21$, $p = .006$, and sleepiness, $F(2, 310.77) = 13.31$, $p < .001$, increased over time in both groups. The results of the

corresponding mixed-effects models and the numbers, means, and standard deviations are presented in the appendix. Figure 1 depicts ratings on anxiety, worry, relaxation, and sleepiness.

Table 2

Psychometric Measures at Pre-Treatment by Group

	GAD (*n* = 49)	NAC (*n* = 21)	*t* [a]	*p*
Primary measures				
CMQ-s: Anxiety	7.12 (1.74)	1.19 (1.69)	*t* = 13.18	*p* < .001
CMQ-s: Worry	7.06 (2.06)	1.19 (1.72)	*t* = 11.47	*p* < .001
CMQ-s: Relaxation	2.82 (1.80)	7.14 (2.10)	*t* = -8.76	*p* < .001
BAI	21.08 (13.08)	2.24 (3.90)	*t* = 9.18	*p* < .001
PSWQ	65.13 (8.54)	27.38 (6.09)	*t* = 18.29	*p* < .001
PSS	24.30 (4.61)	6.42 (4.34)	*t* = 14.46	*p* < .001
Secondary measures				
BDI	14.98 (6.64)	1.10 (1.55)	*t* = 13.79	*p* < .001
CSAI-c	22.47 (5.91)	7.90 (1.95)	*t* = 15.42	*p* < .001
CSAI-s	19.35 (5.58)	8.71 (2.19)	*t* = 11.44	*p* < .001
RRA	27.16 (6.71)	12.10 (3.53)	*t* = 12.25	*p* < .001
WW-II	48.24 (16.16)	35.95 (14.01)	*t* = 3.03	*p* = .003

Note. Values are expressed as mean (SD). GAD = Generalized Anxiety Disorder; NAC = non-anxious control; CMQ-s = Customized Mood Questionnaire – short version; BAI = Beck Anxiety Inventory; PSWQ = Penn State Worry Questionnaire, PSS = Perceived Stress Scale; BDI = Beck Depression Inventory; CSAI = Cognitive and Somatic Anxiety Questionnaire (c = cognitive subscale, s = somatic subscale); RRA = Reaction to Relaxation and Arousal Questionnaire; WW-II = Why Worry Scale 2.

[a] *t* values from independent-samples *t*–tests, denominators for *df* vary from 58.67 to 68 depending on the analysis.

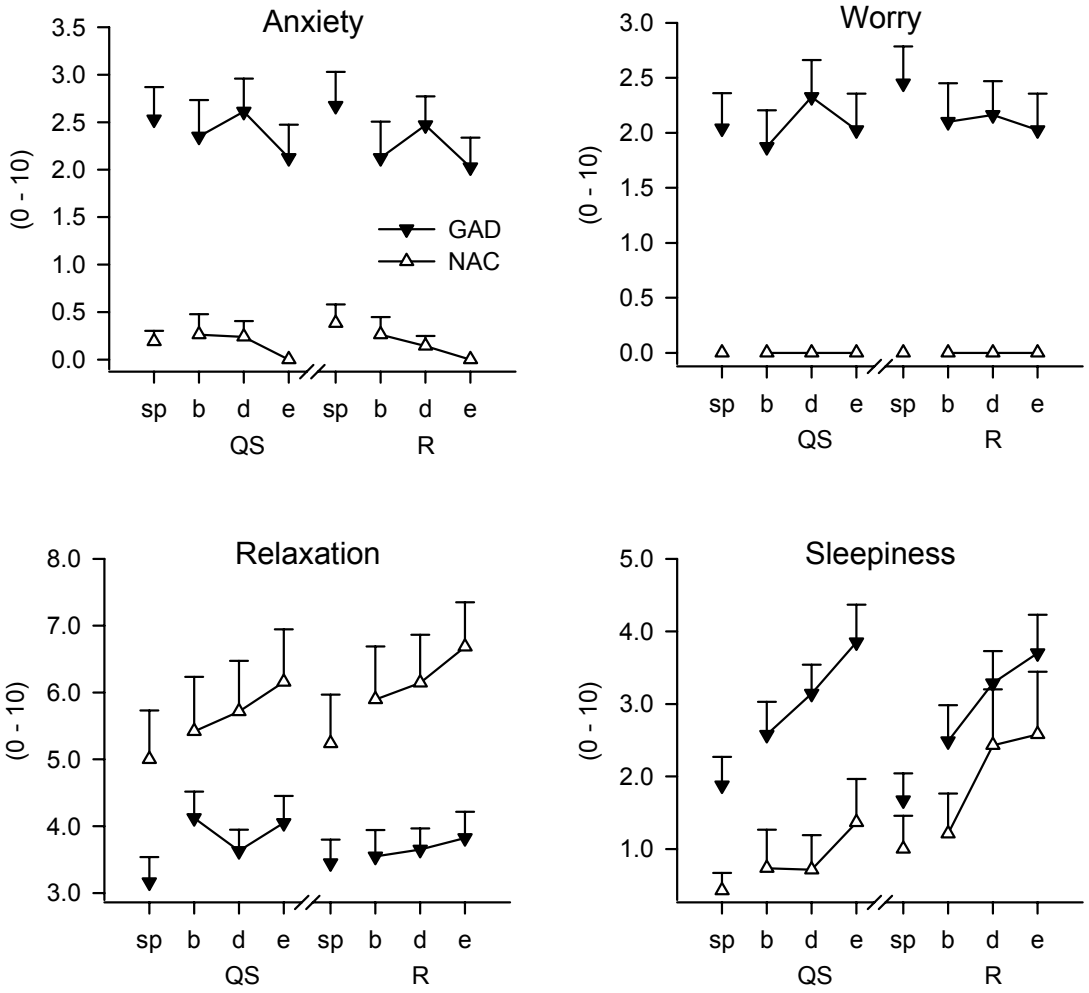

Figure 1. Means plus standard errors for anxiety, worry, relaxation, and sleepiness during the Relaxation Test (randomized order; speech [sp], at the beginning [b], during [d], and at the end [e] of quiet sitting [QS]; speech [sp], at the beginning [b], during [d], and at the end [e] of relaxation [R]) in Generalized Anxiety Disorder (GAD) patients and non-anxious controls (NAC) at pre-treatment.

During the minute before speech and the speech, GAD patients and non-anxious controls did not differ in movement as measured by the accelerometer. GAD patients had significantly higher HRs than non-anxious controls, $F(1, 67.83) = 8.72$, $p = .004$. There were significant time effects for SCL, $F(2, 304.21) = 5.26$, $p = .006$, and NSF, $F(2, 299.32) = 41.03$, $p < .001$, with SCL shaping an inverse U-curve with the maximum at min 1 of the speech and NSF declining from min 1 to 2 of the

speech. The results of the corresponding mixed-effects models and the numbers, means, and standard deviations are presented in the appendix.

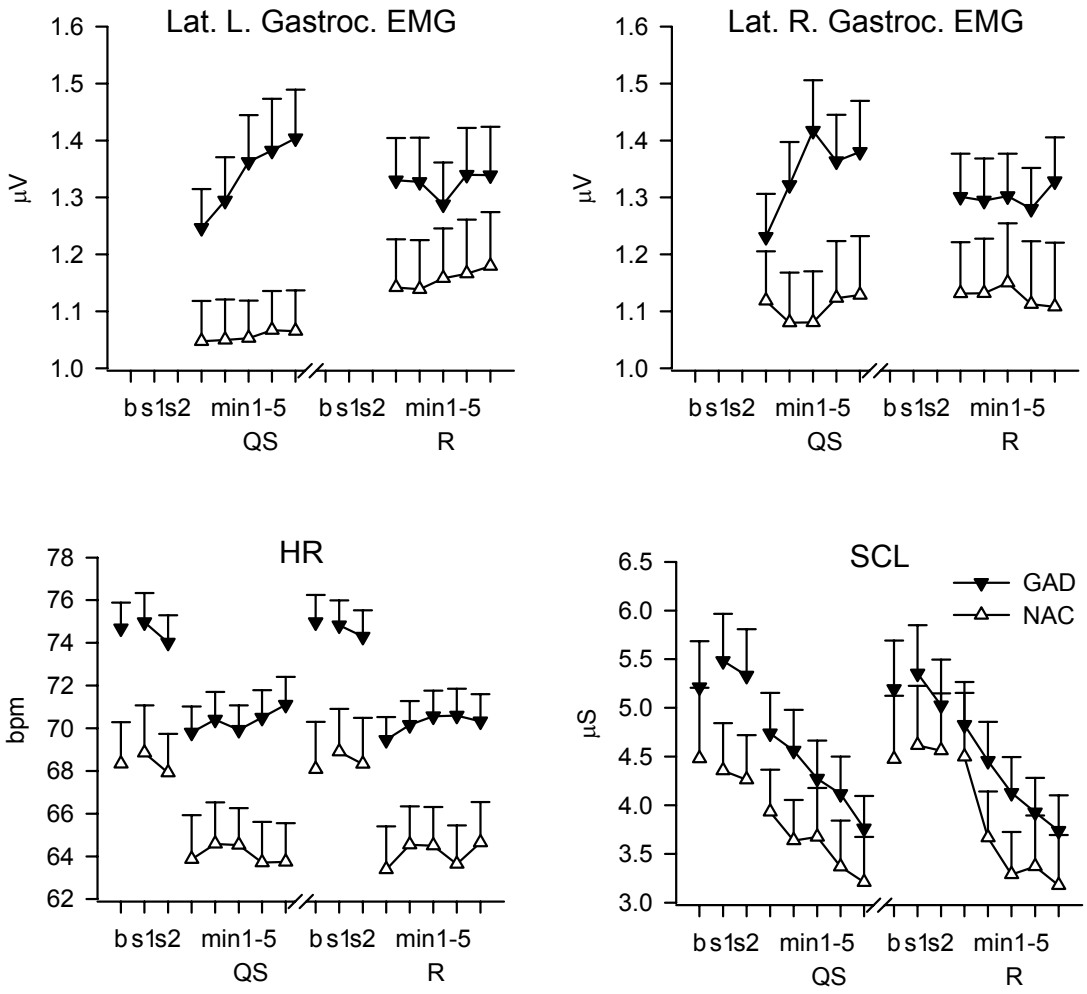

Figure 2. Means plus standard errors for the left and right gastrocnemius EMG, heart rate (HR), and skin conductance level (SCL) during the Relaxation Test (randomized order; 1 min before speech [b], 2 min speech [s], 5 min quiet sitting [QS]; 1 min before speech [b], 2 min speech [s], 5 min relaxation [R]) in Generalized Anxiety Disorder (GAD) patients and non-anxious controls (NAC) at pre-treatment.

The groups did not differ in movement during QS and R segments. There were no significant group differences in muscle tension, although there were trends towards higher gastrocnemius activation (left: $p = .05$; right: $p = .05$) in the GAD patients (see

Figure 2). There were significant time effects for the forearm flexor muscles indicating deactivation over time (left: F[4, 573.65] = 3.91; p = .004, right: F[4, 562.57] = 2.69, p = .03). Frontalis muscle tension, however, increased over time, F(4, 554.19) = 3.92, p = .004. Forehead muscle tension was higher during QS than R, F(1, 602.27) = 5.98, p = .01. Non-anxious controls had significantly lower HRs than GAD patients, F(1, 67.13) = 10.22, p = .002 (see Figure 2). These group differences were not reflected in RSA_{TF}. (For RSA_{TF}, there were no differences in coherence between groups, and only 4% of RSA_{TF} values had to be excluded because of coherence below 0.5.) End-tidal pCO_2 increased over time, F(4, 574.17) = 7.43, p < .001, and successfully distinguished GAD patients from non-anxious controls, F(1, 84.25) = 10.05, p = .002, in that GAD patients had lower end-tidal pCO_2 concentrations (see Figure 3). RR and TV (see Figure 3) may explain the CO_2 finding: During QS, GAD patients had higher RRs than non-anxious controls, while TVs were similar. During R, GAD patients lowered their breathing rates to that of non-anxious controls but compensated this with increased respiratory depth. GAD patients had lower RRI than non-anxious controls, F(1, 94.32) = 7.50, p = .007, and RRI was lower in the R than the QS condition, F(1, 285.19) = 7.55, p = .006. The Group x Time x Condition interaction for RRI was the result of RRI decreasing in GAD patients but not non-anxious controls during the R condition, F(4, 510.90) = 3.85, p = .004 (see Figure 3). Overall, TVI decreased over time, F(4, 478.28) = 4.39, p = .002, while RR increased, F(4, 565.55) = 3.40, p = .009. SCLs and NSFs decreased over time (SCL: F[4, 546.60] = 30.85, p < .001; NSF: F[4, 441.80] = 41.52, p < .001), and SCLs were consistently but not significantly lower in non-anxious controls than GAD patients (see Figure 2). There were more NSFs during QS than during R, F(1, 211.57) = 7.30,

p = .007. The results of the corresponding mixed-effects models and the numbers, means, and standard deviations are presented in the appendix.

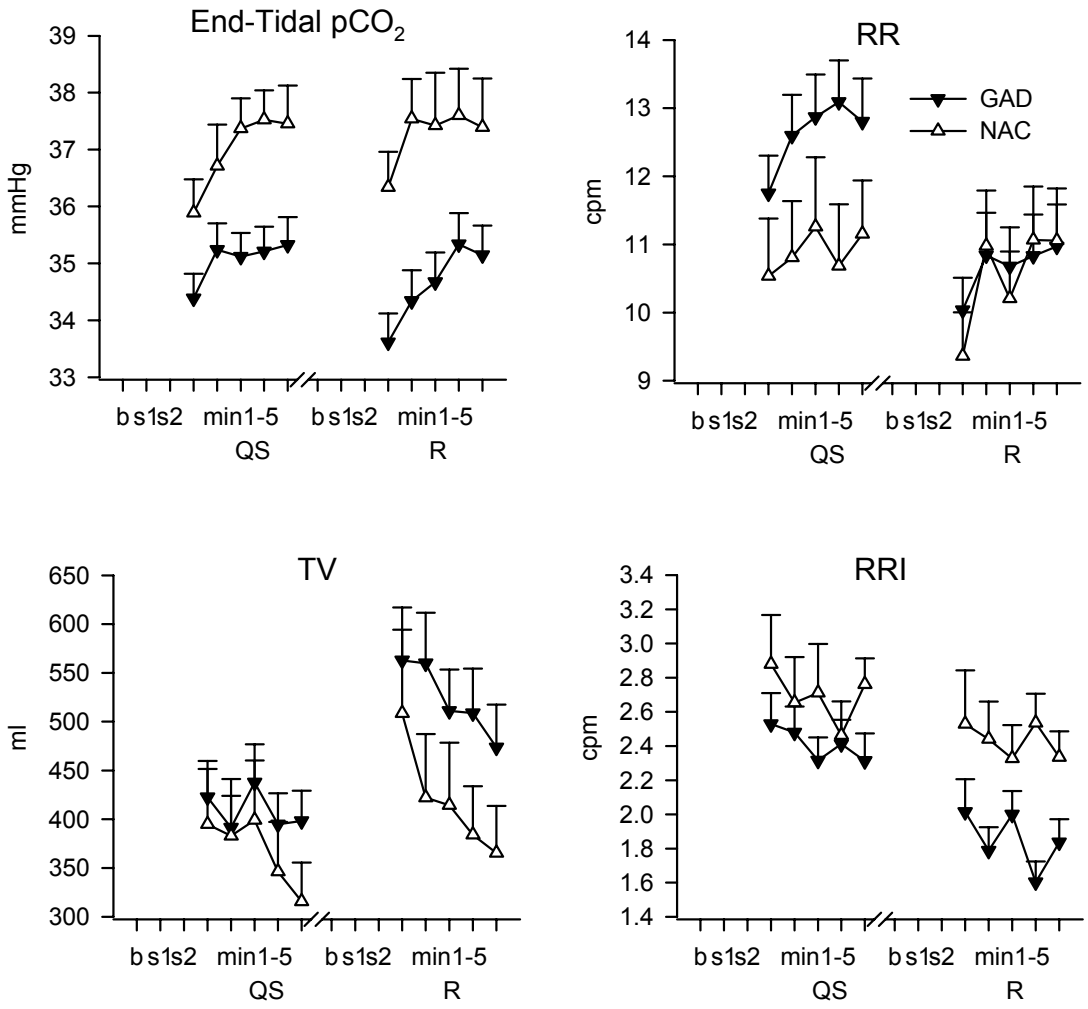

Figure 3. Means plus standard errors for end-tidal pCO2, respiratory rate (RR), tidal volume (TV), and respiratory rate instability (RRI) during the Relaxation Test (randomized order; 1 min before speech [b], 2 min speech [s], 5 min quiet sitting [QS]; 1 min before speech [b], 2 min speech [s], 5 min relaxation [R]) in Generalized Anxiety Disorder (GAD) patients and non-anxious controls (NAC) at pre-treatment.

Pre-Treatment Differences Between AR and WLC Participants

At baseline, the AR and WLC groups did not differ on any of the clinical outcome variables. During the pre-treatment Relaxation Test, the WLC group scored higher on anxiety than the AR group during the beginning of QS and R, while the scores were similar at the end of QS and R, $F(2, 213.32) = 3.37$, $p = .04$. The group and Group x Time effects for worry (Group: $F[1, 51.81] = 5.81$, $p = .02$; Group x Time: $F[2, 212.75] = 3.60$, $p = .03$) during QS and R were explained by higher levels of worry in the WLC than AR group. Worry ratings rose and fell in the WLC group from the beginning to the end of QS and R, while the scores remained constant in the AR group. For the physiological measures, there was a Group x Condition interaction for accelerometry during QS and R, $F(1, 294.82) = 7.10$, $p = .008$, with AR participants exhibiting more movement during QS than R, and vice versa in the WLC group. The results of the mixed-effects models and the numbers, means, and standard deviations are presented in the appendix.

Pre-Treatment Differences Between GAD Completers and Dropouts

There were no differences between GAD completers and dropouts in the clinical outcome measures at baseline, nor did the groups differ on any psychophysiological measure during the pre-treatment Relaxation Test or, when applicable, on any therapeutic relationship measure during the first treatment session.

Correlational Analyses at Pre-Treatment

Bivariate correlations of the items of the CMQ-s (anxiety, worry, and relaxation) and the centered intercepts of the same items during the Relaxation Test with the centered intercepts of the physiological data during the Relaxation Test were computed for the QS and R segments, and are presented in the appendix. For the centered intercepts of the electromyographic measures, 1 and 2 out of 36 possible correlations were significant during R and QS, respectively. The two significant associations during QS indicated that less muscle tension was associated with more anxiety and worry. Out of 54 correlations, 2 and 2 centered intercepts of secondary physiological measures were associated with centered intercepts of the psychometric measures during the R and QS segments, respectively.

Very tolerant criteria were used to adjust for multiple testing. None of the correlations would have been significant if the alpha levels were corrected with traditional conservative (e.g., Bonferroni, 1936) or liberal (e.g., Hochberg, 1988) techniques. The probability for finding at least one significant correlation by chance in each table was $1 – (1 - .05)^{36} = 84\%$ for the primary and $1 – (1 - .01)^{54} = 42\%$ for the secondary physiological measures (see Shaffer, 1995, for critical comments on this formula). The high likelihood of Type I error and the fact that some of the relationships found were not in the expected direction suggest that the significant correlations were due to chance.

Post-Treatment Improvement

For the completer analysis, the Group x Progress mixed-effects models on the primary and secondary outcome measures indicated significant progress effects for all primary and three of the five secondary outcome measures, all with change in the direction of improvement. For the primary outcome measures, significant Group x Progress interactions for self-ratings of anxiety, $F(4, 139.56) = 2.99$, $p = .02$, worry, $F(4, 137.03) = 2.58$, $p = .04$, and perceived stress, $F(4, 137.87) = 4.59$, $p = .002$, indicated that the AR group improved significantly more than the WLC group. Self-ratings of relaxation and scores of the BAI and PSWQ moved in the same direction, but were statistically nonsignificant. ESs for the primary outcome measures of the AR versus WLC comparison of the pre-treatment/post-treatment differences scores ranged from 0.25 to 1.13.

The pattern of more improvement over time in the AR than in the WLC group applied to all secondary outcome measures with the exception of depression. Scores on the BDI were lower at post-treatment than at the initial interview in both groups, but did not differ between them. There was a Group x Progress interaction for adverse reactions to relaxation, $F(1, 31.73) = 7.67$, $p = .009$, in that these reactions decreased more with treatment progress in the AR group than in the WLC group. The differential decrease in reasons for worrying approached significance, $F(1, 29.89) = 6.74$, $p = .01$. ESs for the secondary outcome measures of the AR versus WLC comparison of the pre-treatment/post-treatment differences scores ranged from 0.03 to 0.95.

Fifty-three percent of AR patients compared to 7% of WLC participants met criteria for clinically significant improvement at post-treatment. The intention-to-treat analysis had fewer significant results because values of dropouts were carried forward. Only 36% of AR patients compared to 5% of WLC patients were considered clinically improved after treatment. There were time effects for five of the six primary and three of the five secondary outcome measures, but only perceived stress declined more over time in AR than WLC patients, $F(1, 171.46) = 4.05$, $p = .004$. ESs for primary measures ranged from 0.24 to 0.67, for secondary measures from -0.06 to 0.67. Figure 4 displays self-ratings of anxiety and worry (CMQ-s) for the AR, WLC, and NAC groups from pre-treatment to follow-up. The results of the corresponding mixed-effects models for treatment improvement, effect sizes, and the numbers, means, and standard deviations are presented in the appendix.

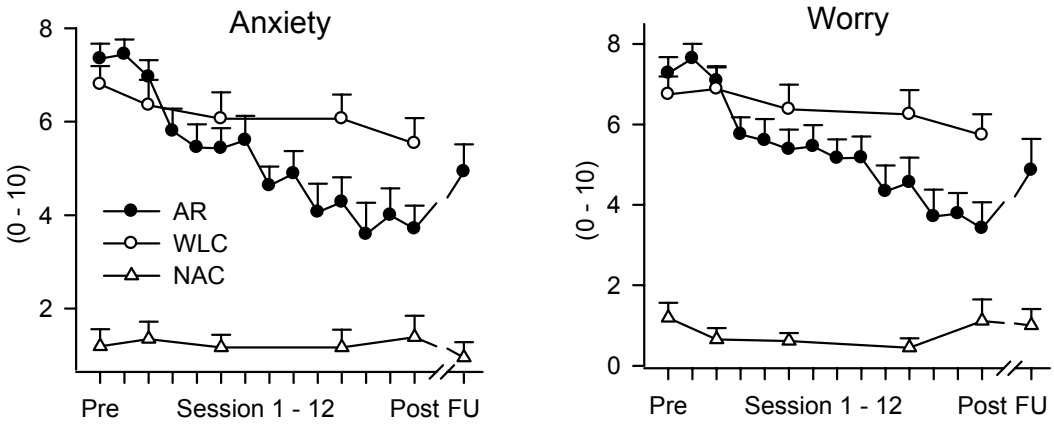

Figure 4. Means plus standard errors for anxiety and worry before (Pre), during, and after (Post) treatment, and at follow-up (FU) in the Applied Relaxation (AR), waiting list control (WLC), and non-anxious control (NAC) groups.

Treatment Expectancy and Therapeutic Relationship Measures

Expectancy and credibility measures at the end of the first session indicated that AR patients had moderately high treatment expectancy (M = 67.00, SD = 23.50, on a scale from 0 to 100), found the treatment logical (M = 7.24, SD = 1.56, on a scale from 0 to 9), but were less confident that the treatment would alleviate their symptoms (M = 5.64, SD = 1.82, on a scale from 0 to 9) or help with other problems such as panic attacks (M = 5.83, SD = 2.01, on a scale from 0 to 9). The participants were moderately confident in recommending the treatment to friends with similar problems (M = 6.42, SD = 1.50, on a scale from 0 to 9).

One-way repeated-measures mixed-effects model analyses on each of the eight factors of the RI (ratings on *regard*, *empathy*, *unconditionality*, and *congruence* by clients and therapists) administered at the end of Session 1, 4, 8, and 12 indicated significant progress effects on the clients' perception of the therapists' *empathy*, $F(3, 60.74) = 3.05$, $p = .04$, and *congruence*, $F(3, 59.26) = 2.92$, $p = .04$, and the therapists' ratings of their *empathy* towards the client, $F(3, 56.04) = 4.17$, $p = .01$. In these cases (as well as in the other nonsignificant cases) the quality of the relationship increased over time. Similarly, each subscale of the WAI (ratings by clients and therapists on agreement on the *tasks* and *goals* of treatment, and on the *bonds* between client and therapist) increased with progress in treatment, although the same type of analysis yielded significant results only for the therapists' ratings on the *bonds* with the clients, $F(3, 55.41) = 8.78$, $p < .001$.

The intention-to-treat analyses yielded the same pattern, with all patient and therapist ratings in the RI and WAI increasing over time. There were only two significant time effects: In the RI, the clients' perception of *unconditionality* of the therapist increased over time, $F(3, 75.13) = 2.89$, $p = .04$, and in the WAI the therapists reported stronger *bonds* with patients with progress in treatment, $F(3, 76.06) = 6.38$, $p < .001$.

In the completer and intention-to-treat analyses, the therapists' *congruence*, *empathy*, *level of regard*, and *unconditionality* was consistently rated higher by the therapists than the clients, suggesting that the therapists saw their relationship with the clients as more positive than the clients did. No such differences were evident for the WAI. The results of the mixed-effects models and the numbers, means, and standard deviations are presented in the appendix.

Psychophysiological Change With Treatment in the Relaxation Tests

The completer analysis of the psychometric data of the speech segments of the five Relaxation Tests from pre-treatment to post-treatment did not reveal any significant effects for progress but one significant Group x Progress interaction, with relaxation during speech increasing with progress in the study in the AR group. Ratings of the WLC group did not change from the first to the fourth Relaxation Test, and then declined, $F(4, 294.90) = 2.64$, $p = .03$. In addition, participants were less likely to worry during the speech if it was followed by QS than if it was followed by R, $F(1, 331.72) = 6.29$, $p = .01$.

The R and QS segments of the Relaxation Tests showed significant time effects for six of eight outcome measures, indicating that towards the end of each laboratory assessment participants felt less anxious, $F(2, 946.92) = 4.04$, $p = .02$, and worried, $F(2, 1030.56) = 3.37$, $p = .03$, more relaxed, $F(2, 956.18) = 15.31$, $p < .001$, and pleasant, $F(2, 1026.47) = 5.84$, $p = .003$, but also more bored, $F(2, 1012.31) = 20.36$, $p < .001$, and sleepy, $F(2, 998.25) = 76.33$, $p < .001$, than at the beginning. Participants in the WLC group were generally sleepier than their AR counterparts, $F(1, 88.20) = 17.26$, $p < .001$. A Group x Time interaction indicated that sleepiness in the WLC group increased faster than in the AR participants, $F(2, 998.25) = 5.95$, $p = .003$. Generally, participants rated themselves as more anxious, $F(1, 1100.25) = 4.43$, $p = .04$, and bored, $F(1, 1051.62) = 12.80$, $p < .001$, during the QS than the R condition. Only one of the psychometric measures that were rated repeatedly during the Relaxation Tests indicated that AR participants progressed differently than the WLC group with therapy: There was a significant Group x Progress interaction for the self-rating of relaxation, $F(4, 302.96) = 2.95$, $p = .02$, with AR participants rating themselves more relaxed as treatment progressed, while, similar to the speech segment, ratings of the WL group did not change from the first to the fourth Relaxation Test, and then declined. Figure 5 depicts the self-ratings of anxiety, relaxation, and worry from the CMQ-l during the Relaxation Tests from pre-treatment to follow-up.

The intention-to-treat analyses had similar, yet fewer significant results. The results of the mixed-effects models and the numbers, means, and standard deviations are presented in the appendix.

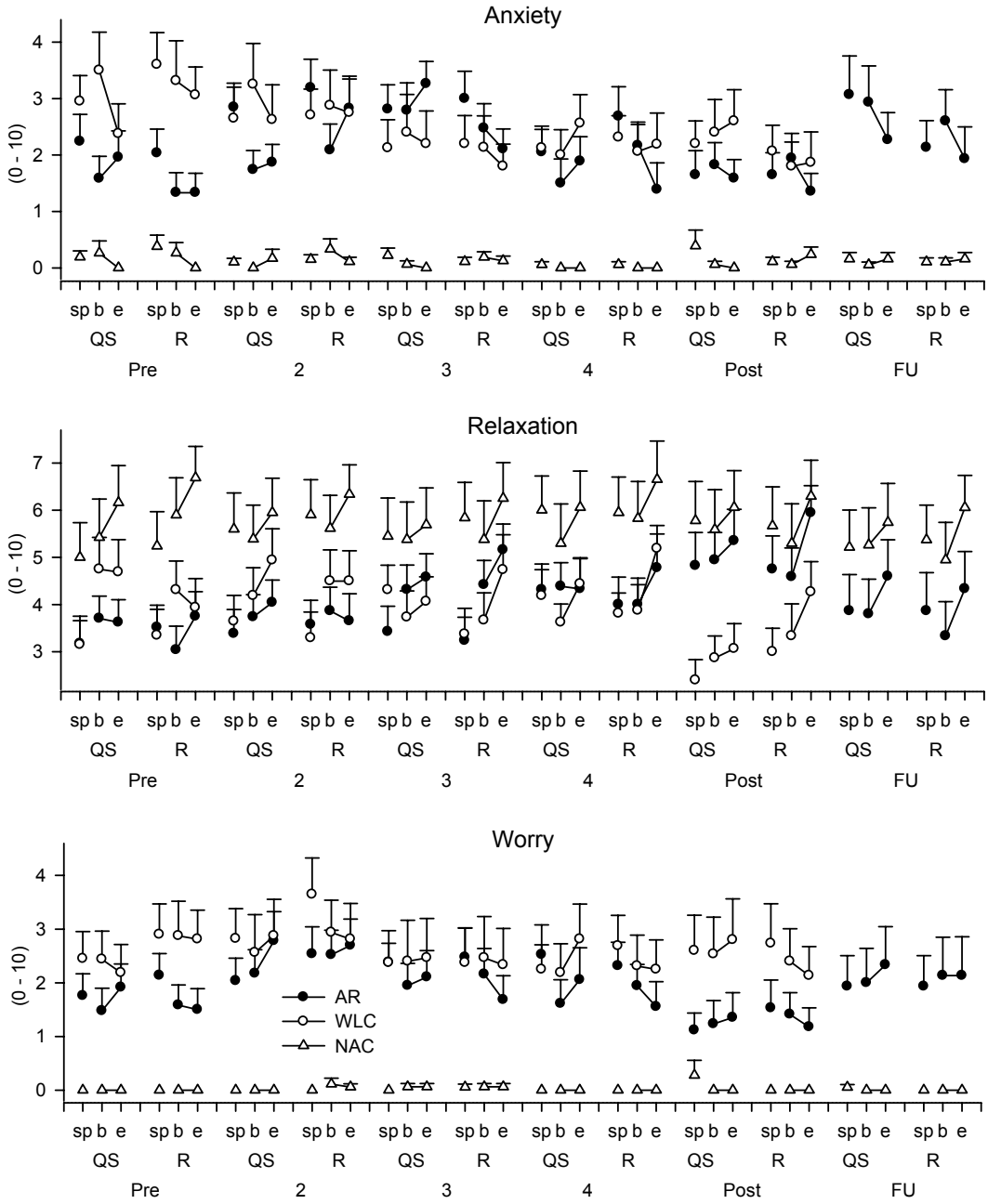

Figure 5. Means plus standard errors for anxiety, relaxation, and worry during quiet sitting (QS) and relaxation (R) (sp = speech, b = at the beginning, e = at the end) before (Pre), during, and after (Post) treatment, and at follow-up (FU) in the Applied Relaxation (AR), waiting list control (WLC), and non-anxious control (NAC) groups.

The mixed-effects analyses of the speech segments of the physiological data indicated that movement during speech decreased over time, $F(2, 1054.97) = 7.37$, $p < .001$, and progress, $F(4, 325.95) = 3.60$, $p = .007$, in both groups during the five

Relaxation Tests. There were time effects for the electrodermal measures during the speech section with SCLs forming an inverted U with the highest values during the first minute of the speech, $F(2, 889.08) = 5.69$, $p = .003$, and NSFs decreasing over time, $F(2, 815.74) = 29.84$, $p < .001$. Values of the electrodermal measures during speech changed with progress in treatment. SCLs declined from pre-treatment to post-treatment, $F(4, 469.24) = 4.60$, $p = .001$. A Time x Progress interaction term for NSF indicated that the differences in fluctuations between minutes within a Relaxation Test got smaller as the numbers of NSFs across sessions dropped, $F(8, 908.62) = 3.17$, $p = .001$. Besides that, NSFs were higher during QS than during R, $F(1, 1026.79) = 7.28$, $p = .007$, and were generally higher in WLC than AR participants during min 1 but ended at similar levels by min 3, $F(2, 815.74) = 5.21$, $p = .006$.

Movement during the QS and R segments in the five Relaxation Tests was not generally different between AR and WLC, but a significant Group x Condition x Progress was largely caused by more movement of the AR group in the QS than the R condition during the first two Relaxation Tests, while the WLC group had higher accelerometry values during the R than the QS conditions of the same tests, $F(4, 893.51) = 4.02$, $p = .003$. Furthermore, the WLC group showed more movement during the third laboratory assessment in the QS than the R condition.

There were time effects for five of the six electromyographic measures, but with inconsistent trends. Activity of the left and right gastrocnemius (left: $F[4, 1719.04] = 5.22$, $p < .001$; right: $F[4, 1696.45] = 2.98$, $p = .02$) and the nondominant lateral frontalis muscles, $F(4, 1529.64) = 19.85$, $p < .001$, increased over time, while the left and right forearm flexors indicated relaxation (left, $F[4, 1701.89] = 16.02$, $p <$

.001; right: F[4, 1671.15] = 12.71, p < .001). More consistent, four of the six EMG measures had higher values during QS than R (right gastrocnemius EMG: F[1, 1305.72] = 4.18, p = .04; left forearm EMG: F[1, 1413.19] = 29.11, p < .001; right forearm EMG: F[1, 1575.96] = 17.09, p < .001; frontalis EMG: F[1, 1169.82] = 41.21, p < .001). Frontalis EMG levels dropped with progress in the study, but not more in the AR than the WLC group, F(4, 344.23) = 3.26, p = .01. In contrast, the left gastrocnemius EMG exhibited a reduction in muscle activity in the AR group with Progress, while electromyographic recordings were constant in the waiting group, F(4, 386.40) = 2.78, p = .03 (see Figure 6). There was a Group x Condition effect for the left forearm EMG, with the AR group exhibiting higher muscle tension than the WLC group during QS, while the groups did not differ in the R condition, F(1, 1413.19) = 5.78, p = .02.

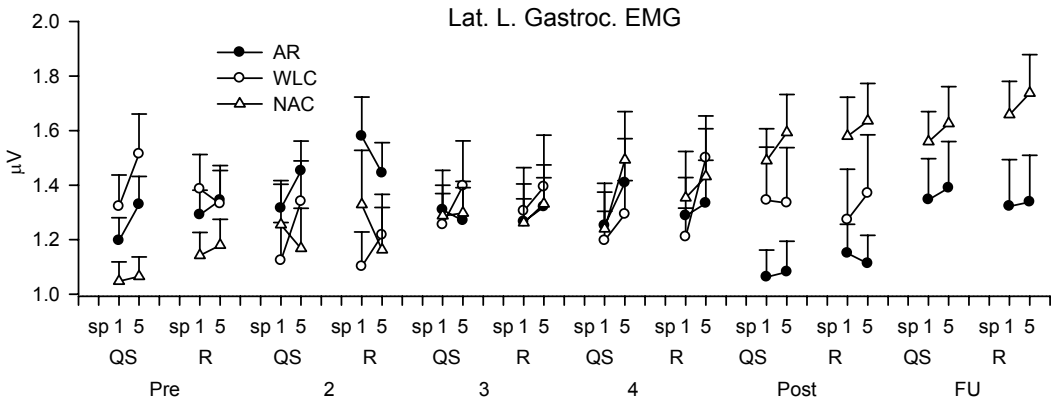

Figure 6. Means plus standard errors for the lateralis left gastrocnemius EMG during quiet sitting (QS) and relaxation (R) (sp = speech min 1, 1 = min 1, 5 = min 5) before (Pre), during, and after (Post) treatment, and at follow-up (FU) in the Applied Relaxation (AR), waiting list control (WLC), and non-anxious control (NAC) groups.

Of the cardiovascular measures, HR increased over time, F(4, 1334.37) = 5.02, p < .001. There was a marginal Group x Progress interaction for RSA_{TF} (see

Figure 7), $F(4, 249.37) = 3.19$, $p = .01$, indicating that vagal tone during the QS and R segments increased with progress in the AR group but did not change in the WLC group. Three percent of all RSA_{TF} data had to be excluded because the coherence of the spectral data was below 0.5, and the coherence did not differ between groups. There was a time effect for coherence, $F(4, 1273.73) = 7.04$, $p < .001$, with coherence increasing from min 1 to 5.

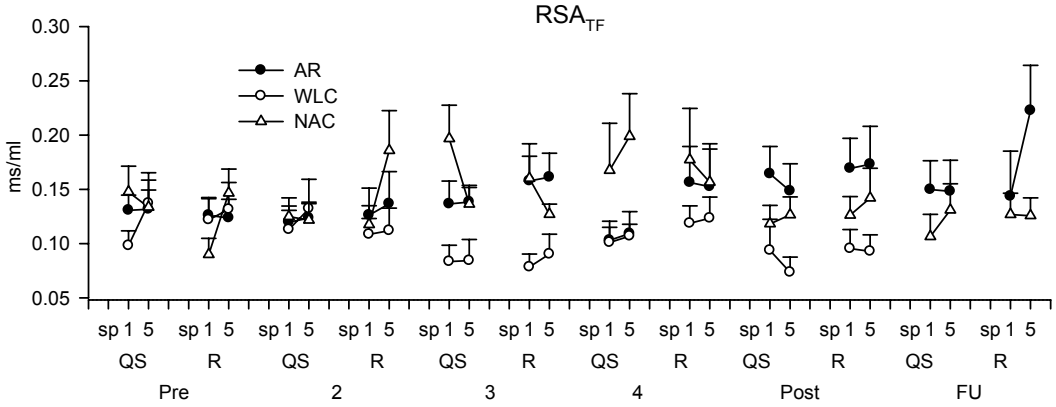

Figure 7. Means plus standard errors for RSA_{TF} during quiet sitting (QS) and relaxation (R) (sp = speech min 1, 1 = min 1, 5 = min 5) before (Pre), during, and after (Post) treatment, and at follow-up (FU) in the Applied Relaxation (AR), waiting list control (WLC), and non-anxious control (NAC) groups.

There were time effects for all respiratory variables: From min 1 to 5 end-tidal pCO_2, $F(4, 1703.86) = 49.70$, $p < .001$, and RR, $F(4, 1673.33) = 45.47$, $p < .001$, increased while RRI, $F(4, 1517.03) = 6.24$, $p < .001$, TV, $F(4, 1637.16) = 15.17$, $p < .001$, and TVI, $F(4, 1328.46) = 18.97$, $p < .001$, decreased. RR, $F(1, 1546.83) = 107.65$, $p < .001$, and RRI, $F(1, 1421.38) = 35.26$, $p < .001$, were higher during QS than R, while TV was higher during the R condition, $F(1, 1485.20) = 36.54$, $p < .001$. Only two measures indicated change with progress: CO_2 increased from pre-treatment to post-treatment, $F(4, 331.40) = 10.08$, $p < .001$. Similarly, there was an increase in

RR, $F(4, 303.49) = 4.51$, $p = .001$. The Group x Progress interaction for TV, $F(4, 309.34) = 3.38$, $p = .01$, was caused by deep breaths in the AR group during the fourth Relaxation Test. End-tidal pCO_2, RR, and TV are depicted in Figure 8.

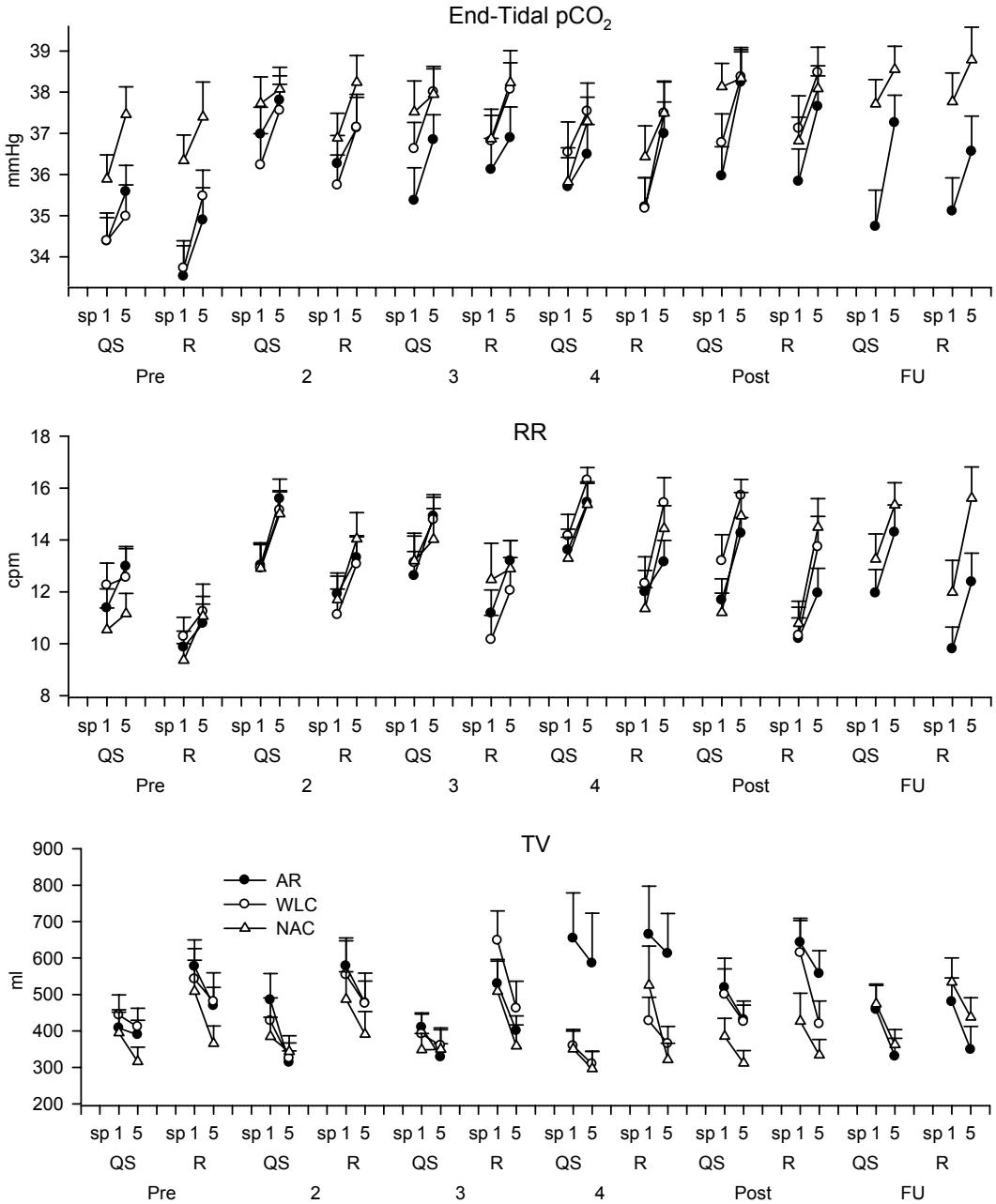

Figure 8. Means plus standard errors for end-tidal pCO_2, respiratory rate (RR), and tidal volume (TV) during quiet sitting (QS) and relaxation (R) (sp = speech min 1, 1 = min 1, 5 = min 5) before (Pre), during, and after (Post) treatment, and at follow-up (FU) in the Applied Relaxation (AR), waiting list control (WLC), and non-anxious control (NAC) groups.

Overall, the electrodermal measures indicated a decline from min 1 to 5 (SCL: F[4, 1301.23] = 64.18; p < .001; NSF: F[4, 1300.11] = 29.15, p < .001). For NSFs, this decline got smaller from assessment 1 to 5, F(16, 1352.05) = 2.28, p = .003. There were more NSFs during QS than R, F(1, 1157.62) = 7.97, p < .001. A Group x Progress interaction for SCL was due to the fact that SCL was lower in the AR than the WLC group at pre-treatment, while the groups did not differ at post-treatment, F(4, 548.10) = 4.19, p < .001 (see Figure 9).

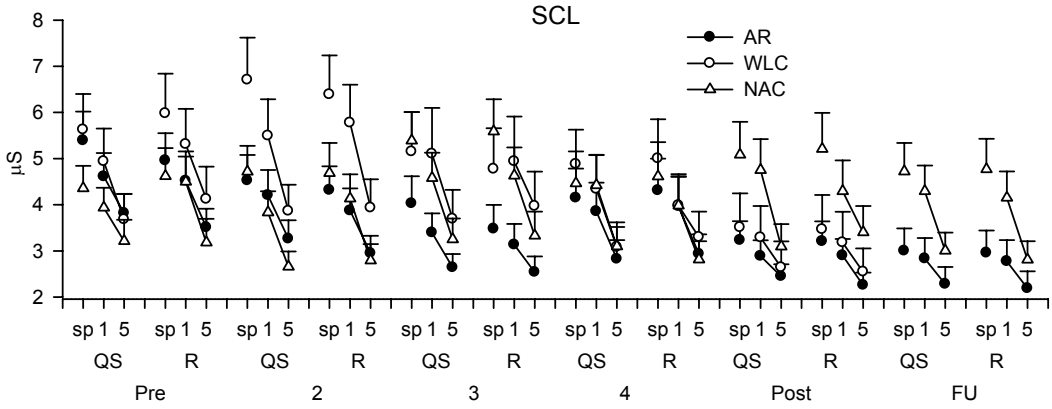

Figure 9. Means plus standard errors for skin conductance level (SCL) during quiet sitting (QS) and relaxation (R) (sp = speech min 1, 1 = min 1, 5 = min 5) before (Pre), during, and after (Post) treatment, and at follow-up (FU) in the Applied Relaxation (AR), waiting list control (WLC), and non-anxious control (NAC) groups.

As for the psychometric data, the intention-to-treat analysis yielded the same pattern of results as the completer analysis, but had fewer significant results due to the carrying forward of values for participants who discontinued the study. The results of the mixed-effects models and the numbers, means, and standard deviations are presented in the appendix.

Follow-Up Improvement

Functioning at follow-up was assessed with repeated-measures mixed-effects models for the AR group on the outcome measures and the psychophysiological measures of the Relaxation Test. When there was a significant main or interaction effect term involving progress, a separate analysis with only the post-treatment and follow-up assessments was performed. The completer analyses of the outcome measures indicated significant progress effects for all primary and three of five secondary measures. The follow-up analysis showed a significant effect of progress only for the self-rating for anxiety $F(1, 16.89) = 4.87$, $p = .04$, which was rated worse during the follow-up than the post-treatment assessment (see Figure 4). There was a trend towards ratings of worse worry during follow-up than post-treatment (see Figure 4), but the analysis was not significant ($p = .06$). Results for the intention-to-treat analysis were nearly identical. At follow-up, 29% of AR and 0% of WLC participants met criteria for clinically significant improvement in the completer analysis, and 24% and 0% in the intention-to-treat analysis.

The completer and intention-to-treat analyses of the psychometric data of the speech segment of the Relaxation Test indicated only that the self-rating of anxiety varied with progress (see Figure 5). Anxiety during speech increased from the first to the second assessment, and then declined from the second to the fifth (post-treatment) Relaxation Test. The follow-up analysis examining post-treatment and follow-up showed a significant progress effect in the completer but not in the intention-to-treat data, $F(1, 60.45) = 6.51$, $p = .01$. Anxiety during speech was rated higher during follow-up than during the post-treatment assessment. There were no main or

interaction effects for progress during QS and R in the completer or intention-to-treat analyses.

There was a significant progress effect for SCL in the speech segments of the Relaxation Tests in the completer but not the intention-to-treat analysis. This effect was caused by a decline of SCL across sessions (see Figure 9). The follow-up analysis found no SCL differences between post-treatment and follow-up. The completer analysis of the QS and R segments of the Relaxation Test indicated that frontalis EMG and SCL declined with progress in the AR group, while end-tidal pCO_2 increased. The significant progress effect for TVI was caused by large values during the fourth Relaxation Test. None of these measures changed from post-treatment to follow-up. The intention-to-treat analyses yielded similar but fewer significant results. Progress effects were significant only for end-tidal pCO_2 and SCL. The results of the mixed-effects models and the numbers, means, and standard deviations are presented in the appendix.

Correlational Analyses for Treatment Progress

For the outcome analysis, change scores of anxiety, worry, and relaxation of the primary outcome measures and psychometric data of the Relaxation Test were correlated with the change scores of the physiological measures of the Relaxation Test. For the data of the Relaxation Tests, change scores were calculated using the subject-specific slopes and intercepts. The change scores were calculated for the QS and R segments of the Relaxation Tests, and change was estimated from pre- to post-treatment, and pre-treatment to follow-up. The resulting eight correlation tables are

presented in the appendix. Similar to pre-treatment correlations, few associations between physiological and psychometric data were found. For example, in the slope analysis of pre- to post-treatment change during the R segment of the Relaxation Test, only 3 of the 36 correlations involving electromyographic data and none of the 54 correlations involving secondary physiological measures were significant. In the intercept analysis, only 3 of the 36 correlations involving electromyographic data and 1 of the 54 correlations involving secondary physiological measures indicated that physiological change was related to self-reported change, with 2 of the 4 correlations suggesting that physiological deactivation was associated with an increase in anxiety.

Similarly, there were only few significant associations between physiological and psychological change in the other correlation tables. Like for pre-treatment, none of the correlations would have reached significance if traditional adjustments for multiple testing (e.g., Bonferroni, 1936; Hochberg, 1988) had been made.

Discussion

The aim of the study was to investigate whether GAD patients exhibit more anxiety, worry, muscle tension, and autonomic activation than non-anxious controls, whether these symptoms are related, and whether muscle relaxation therapy could relieve them. These questions are important, because MRT alone or as part of CBT treatment packages is a commonly prescribed non-pharmacological treatment option for GAD and other anxiety disorders, but one whose mechanisms are unknown. Elucidating them will either justify the assumed rationale of the therapy or undermine it, bringing the future of this treatment method into question. Learning the mechanisms of MRT should help researchers and clinicians decide whether MRT is indicated for some or any anxiety patients. The study is different from many prior investigations of MRT in GAD in that it specifically targets dismantling the effective components of MRT.

Activation in GAD patients

Our pre-treatment analysis did not support the hypothesis that muscle tension is greater in GAD patients than non-anxious controls. We found that self-report measures of cognitive and somatic anxiety, worry, relaxation, perceived stress, and depression successfully distinguished the groups but that during the first laboratory assessment none of the six electromyographic electrodes placed in various locations did so. Instead, cardiopulmonary measures distinguished GAD versus NAC: GAD patients had significantly higher HRs and lower end-tidal pCO_2 than non-anxious

controls, indicating more sympathetic and less parasympathetic activity in the chronically anxious group.

The negative electromyographic findings can be interpreted in two different ways. Either GAD patients do not have greater muscle tension than non-anxious controls although they feel less relaxed as measured by self-report, or muscle tension is present only during worrying periods and our GAD patients did not worry during the laboratory assessment. The latter alternative is unlikely for two reasons: First, we chose a population with chronic anxiety who say they worried "on more days than not" (American Psychiatric Association, 1994, p. 435). Secondly, self-reported values of the CMQ-l indicated that our participants indeed worried more during testing than their non-anxious counterparts.

The question arises whether the physiological differences in HR and end-tidal pCO_2 were simply a reaction to laboratory testing or were representative of the participant's chronic daily anxiety and worry. The reactions to a novel laboratory environment may vary in participants with and without anxiety disorders, and simple recordings may capture these reactive states rather than any sustained differences between groups due to chronic anxiety (Wilhelm & Roth, 2001). To address this problem, we included a speech segment in the Relaxation Test to provide comparable benchmark activation in all participants (Roth et al., 1998). Participants were asked to speak for 2 min about a non-threatening topic each time before they sat quietly or relaxed. We used the last minute before the speech as a measure of anticipatory anxiety in the analysis and included it in the factor time (min 1 before speech, min 1

and 2 during speech) of the repeated-measures mixed-effects models of the speech segments.

During the benchmark speech segments, GAD patients were more anxious, worried, distressed, and sad, and less relaxed than their non-anxious counterparts, and exhibited higher HRs. Thus, we were unable to find a neutral baseline where the diagnosis of GAD had no effect. The differences during the speech segments were the same as during the QS and R segments of the Relaxation Test, indicating that they were not a reaction to speaking but were either due to being tested in a laboratory in general or to tonic trait-like differences between groups.

A sub-analysis indicated that higher activation in GAD during speech, relaxation, and quiet sitting was not moderated by a secondary diagnosis of SAD: There were no differences between GAD patients with SAD and other GAD patients in any psychometric or physiological measures.

Electromyographic measurements cannot be confidently compared across studies because they may depend on the physiological apparatus and procedures. However, we could not find any obvious methodological or procedural discrepancies that would explain why our results contradict the literature of greater EMG in GAD patients than in non-anxious controls (e.g., Hazlett et al., 1994; Hoehn-Saric et al., 1997; Hoehn-Saric & Masek, 1981; Hoehn-Saric et al., 1989). Those authors used sound physiological methodology, and described their procedures and results in detail. The latest three studies (Hazlett et al., 1994; Hoehn-Saric et al., 1997; Hoehn-Saric et al., 1989) differed from ours only in that the authors restricted the analyses to females.

However, Hoehn-Saric and Masek (1981) found no significant gender differences in GAD patients. Likewise, a sub-analysis of our dataset indicated that electromyographic data from five of the six measurement sites did not differ between male and female GAD patients at pre-treatment. Only the left forearm flexor EMG indicated higher muscle tension in chronically anxious women than men.

Our pre-treatment Relaxation Test also explored relaxation in other ways. We found only weak physiological evidence that in untrained individuals the instruction to relax resulted in more relaxation then the instruction to sit quietly. Only one of the primary (lateralis frontalis EMG) and two of the secondary measures (RRI, NSF) were lower during R than QS; the other measures were not different.

We monitored the process of relaxation by asking participants how they felt at the beginning, during, and at the end of each trial, and by averaging each 5 min recording in 1 min segments. Results were inconsistent to whether participants became more relaxed over time: Of the psychometric measures during the Relaxation Test, participants endorsed being more relaxed, bored, and sleepy over time, while measures of anxiety and distress did not change. Of the physiological measures, a decrease in left and right forearm EMG, electrodermal activity, and TVI, and an increase in pCO_2 suggested relaxation over time, but inconsistent with that, activity of the frontalis muscle and RR increased over time.

Consistent with a number of studies (e.g., Mauss et al., 2005; McLeod et al., 1986; Shedivy & Kleinman, 1977), we found that physiological activation within untrained GAD patients was unrelated to self-reported anxiety, worry, and relaxation,

regardless of whether the psychometric data were collected during the Relaxation Test or as part of the pre-treatment assessment battery. Thus, greater anxiety is not related to greater muscle tension within GAD, although one would expect MRT to lead to a larger anxiety reduction in GAD patients with higher anxiety than in patients with lower anxiety at baseline.

Improvement in GAD Patients With AR

We expected that MRT would result in greater symptomatic improvement than waiting, and indeed there was significantly more improvement in the AR than in WLC in 50% of the primary outcome measures in the completer analysis at post-treatment. Cohen's *d* ranged from 0.03 to 1.13, and 53% of AR participants were considered clinically significantly improved by Jacobson et al.'s standards (1984). However, the validity of these results can be questioned because of the high dropout rate in the study (although dropouts did not differ from completers in demographic, clinical, or control measures). Twenty-eight percent of the AR participants dropped out during the intervention, resulting in smaller treatment effect estimates in the intention-to-treat analysis (ESs: -0.06 – 0.67). In addition, some of the moderate treatment gains of the AR group had worn off at follow-up, suggesting that some patients were no longer able to relax successfully after losing contact with the therapist.

In our hands, AR was not as successful as it had been in other recent GAD studies (Arntz, 2003; Borkovec & Costello, 1993; Borkovec et al., 2002; Öst & Breitholtz, 2000). For example, Borkovec and colleagues (2002) found 57% of GAD

patients who were treated with AR plus self-control desensitization, to be within one standard deviation of the mean of non-anxious samples. In our study, only 12% of AR patients in the completer and 7% in the intention-to-treat analysis met this stringent criterion. Several dissimilarities between the current and the other recent outcome studies may account for these differences. Having many psychophysiological tests during the treatment put an additional burden on our patients. Their study appointments were rigidly scheduled so that these tests could take place at constant time intervals. We were strict in demanding that treatment lasted 12 weeks and that patients were tested initially, after 2, 5, and 10 weeks, at post-treatment, and at 6-week follow-up. This inflexibility may have contributed to the high dropout.

Our study differs from the recent randomized trials in that we did not employ clinical outcome measures rated by independent assessors but only self-reported outcome. A disadvantage of this is that we cannot compare our results with those of studies that used common clinician-administered tests, such as the Hamilton Anxiety Rating Scale, which has been called "the gold standard for pharmacological treatment outcome studies for GAD" (Turk, Heimberg, & Mennin, 2004, p. 238). One of our primary questionnaire outcome measures, the BAI, emphasizes somatic symptoms of panic rather than the more cognitively oriented *DSM-IV* GAD symptoms of worry and intrusive thoughts. Not surprisingly, validating samples of GAD patients (M = 18.83, SD = 9.08) scored lower on the BAI than PD patients (M = 28.81, SD = 13.46) (A. T. Beck et al., 1988). Perhaps for this reason, our GAD patients did not score high on the BAI before treatment (M = 21.08, SD = 13.08), and their BAIs did not show significant Group x Progress interactions at post-treatment (although there were progress effects in the AR group in the follow-up analyses). The CSAI may be a

better indicator of worry since it distinguishes cognitive from somatic anxiety, and in future GAD studies the CSAI should be a candidate for the primary outcome measure.

A more general conceptual issue is that we chose an interval of one week as a time frame for all questionnaires during the planning stages of the study. This was deemed necessary not only to standardize assessment, but also to be able to evaluate improvement at specific times during and after treatment. For example, it would not make sense to administer a questionnaire one week after treatment with a reference frame of one month and to consider this assessment post-treatment. We accepted that altering the time frame of a questionnaire might slightly compromise its reliability and validity. However, we did not notice how one item of the PSWQ needed to be changed. Item 12 of the PSWQ asks how typical the statement "I have been a worrier all my life." is. This item became illogical when the questionnaire was changed to read "How typical has this statement been for you during the last week?" If participants contrary to the wording adopted a longer time frame for this question, the PSWQ total score would have changed less over therapy. Nevertheless, the mean difference in the PSWQ between AR and NAC at post-treatment was 25.68. One item could make a maximum difference of only 4 points.

Another possible explanation for our weak treatment effect is the inexperience of our therapists. Five of the six graduate students were second or third year students; only one was in her final year. We did not enter therapist as a factor into the outcome analysis, because the patient loads varied between therapists due to school schedules. However, we explored the data descriptively and did not find evidence suggesting that treatment success differed between therapists or was moderated by experience (as

measured in years in the graduate program). Although therapists were inexperienced, they were carefully trained, and integrity checks of the treatment sessions suggested that they delivered the treatment properly. If there are differences between graduate students and experienced professional therapists, they are unlikely to be in the specifics of how muscle relaxation was taught.

We cannot rule out that our inexperienced therapists differed from experienced therapists in nonspecific treatment factors, such as therapeutic alliance and therapist's competence (e.g., Chatoor & Krupnick, 2001; Lohr, DeMaio, & McGlynn, 2003). For example, our analysis of the therapeutic process indicated that therapists rated some measures of the therapeutic relationship as more positive than the clients did, possibly a sign of naiveté on the part of the inexperienced therapists. It is unlikely, nonetheless, that solely nonspecific factors are responsible for treatment success in AR, because AR compares in its effectiveness for GAD to CBT (e.g., Borkovec & Costello, 1993; Borkovec et al., 2002), a treatment that is "quite effective as well as specific in its effects" (Borkovec et al., 2002, p. 295) in GAD patients. However, Grawe, Donati, and Bernauer (2001) suggested that nonspecific and specific treatment factors interact and that active ingredients of a treatment are not potent if the nonspecific factors do not provide a strong therapeutic foundation. If true, our results have to be interpreted with care considering that our therapists may not have managed to create similar therapeutic alliances to those of experienced therapists.

We have some evidence that our patients would have preferred a cognitive rather than a physiological intervention. Although not measured systematically, during supervision therapists mentioned that clients kept inquiring about cognitive

strategies to reduce worry, in spite of the therapists' emphasis on how muscle relaxation can reduce worry. *DSM-IV* diagnosed GAD patients may be less bothered by physiological symptoms than anxiety researchers think.

A reexamination of the literature that tested the clinical effectiveness of AR in GAD patients revealed that our study was one of the first that selected GAD patients by *DSM-IV* criteria. Of the four most recent studies on GAD and AR (Arntz, 2003; Borkovec & Costello, 1993; Borkovec et al., 2002; Öst & Breitholtz, 2000), only one (Borkovec et al., 2002) used *DSM-IV* criteria while the others recruited patients using the *DSM-III-R* (American Psychiatric Association, 1987) GAD diagnosis. In addition, Borkovec et al.'s study differed from ours in combining AR with self-control desensitization.

Patient selection criteria may have influenced the effectiveness of AR in GAD as the diagnosis of GAD evolved over the different editions of the *DSM*. GAD became narrower with more emphasis on the uncontrollability of worry in an attempt to improve specificity. While chronic anxiety was not separated from episodic anxiety (e.g., panic) in the first two editions of the *DSM* (Mennin, Heimberg, & Turk, 2004), GAD in *DSM-III* (American Psychiatric Association, 1980) was defined as persistent anxiety for one month or more during which an unspecified number of symptoms in three of four clusters (motor tension, autonomic hyperactivity, apprehensive expectation, vigilance) were present. Apprehensive expectation became a more central feature of GAD in *DSM-III-R*, and two or more spheres of anxiety and worry, that were different from those typical of other disorders, had to be present for at least six months (Barlow, Blanchard, Vermilyea, Vermilyea, & DiNardo, 1986). In

addition, 6 of 18 symptoms of three remaining clusters (motor tension, autonomic hyperactivity, vigilance) had to be frequently present during anxiety. *DSM-IV* extended the requirements to that the excessive anxiety and worry had to be difficult to control. Many of the symptoms of autonomic hyperactivity were dropped because *DSM-III-R* defined GAD patients endorsed these symptoms infrequently and inconsistently (Marten et al., 1993). In *DSM-IV*, GAD patients have to endorse only three or more of six symptoms (restlessness, being easily fatigued, difficulty concentrating, irritability, muscle tension, sleep disturbance).

We suspect that the current GAD criteria have defined a subtype of chronic anxiety that is atypical for the disorder as a whole. On a biological level, the *DSM-IV* GAD subtype may be atypical in having greater activation of regions of the frontal cortex reflecting worried thinking and less activation of the amygdala and autonomic nervous system as a result of cortical inhibition. AR may have proven to be less useful in our study because our participants were recruited using *DSM-IV* GAD criteria and exhibited excessive worry as a salient symptom. In contrast, older studies were more likely to recruit participants with somatic activation for whom MRT may be more indicated. Inconsistent, however, with *DSM-IV* GAD patients not being autonomically aroused, our *DSM-IV* GAD patients had chronically elevated HRs, even after we controlled for factors that are known to influence HR, such as age, gender, medication, fitness, and movement. This result demonstrates that at least some *DSM-IV* diagnosed GAD patients exhibit signs of autonomic hyperarousal.

Activation Change in GAD Patients with AR

We hypothesized that muscle tension would initially be high in GAD and progress in treatment would go hand in hand with a reduction in muscle tension. However, we did not find more muscle tension during the initial laboratory assessments in GAD patients than in non-anxious controls, so we cannot speak of MRT normalizing muscle tension. Patients nevertheless may have learned a skill, which they could apply during daily life when muscle tension rises above the levels observed in our laboratory. Although it is not a prerequisite to show that individuals can learn to relax their muscles, the treatment did reduce overall anxiety and worry in that improvement was greater in the AR than the WLC group.

The psychometric data from the repeated Relaxation Tests suggested that in some ways AR patients had a different time course of change over therapy than their WLC counterparts. As therapy progressed, the AR completers rated themselves overall more relaxed while WLC group did not rate itself changed from the first to the fourth Relaxation Test and then rated itself as less relaxed. There were no significant interactions involving group, time, and progress, indicating that the AR group was unable to relax faster with training than the waiting group. The fact that anxiety during the speech segments at follow-up was higher than at post-treatment in the AR group may be yet another indicator of the AR effects trailing off from post-treatment to follow-up.

The analysis of the physiological data was inconsistent as well. In the completer analysis, electromyographic levels in four of the six muscle sites, RR, RRI,

and NSF were higher during QS than R, indicating that the instruction to relax generally led to more deactivation. However, these were not different between the AR and WLC group, and therefore cannot be attributed to relaxation training. Similarly, frontalis muscle activity dropped over the course of the six physiological assessments but not differentially by group. End-tidal pCO_2 increased from pre-treatment to post-treatment. A possible explanation is that GAD patients were hyperventilating during the first assessments in the laboratory because they were anxious, and that repeated exposure to the laboratory lowered this anxiety. However, inconsistent with the CO_2 findings, there were no progress effects for anxiety and worry in the AR group during the Relaxation Test, even though relaxation increased. Furthermore, HR, the second measure that differentiated GAD patients from non-anxious controls at baseline, did not change over physiological assessments in the GAD group.

Three physiological measures changed more in the AR group than in the waiting group as therapy progressed. There was a reduction in muscle activity in the left gastrocnemius EMG in the AR group while electromyographic recordings remained constant in the waiting group. The same interaction was marginally significant for RSA_{TF}, an indicator of parasympathetic tone. SCL was lower in the AR than the WLC group at pre-treatment, while the groups did not differ at post-treatment.

Overall, these results are weak evidence that AR patients learned a skill during therapy that can be measured psychophysiologically. Neither EMG data nor measures of autonomic activation consistently showed that AR patients were able to reduce activation more over time, progress, or differentially by condition than the WLC

group. There were even many counterintuitive results. For example, HR and frontalis EMG increased with time, although one would expect these measures to decrease in the transition from speaking to QS and R.

Our correlational data supported the notion that psychological change was not associated with physiological change. There were few associations between change in overall outcome and psychometric data of the Relaxation Tests and physiological change during the Relaxation Tests, and the direction of the associations was inconsistent. Furthermore, there were not many more significant correlations than were expected by chance. We did not analyze the associations between and within psychological and physiological measures as exhaustively as had been done previously (e.g., Fridlund et al., 1982; Fridlund et al., 1986) because these relationships lay outside the hypotheses in which we were interested.

Statistical Considerations

It is always possible that different analysis methods would have led to slightly different conclusions. We chose to analyze the repeated-measures data with mixed-effects models because these models are advantageous to the multivariate or repeated-measures analysis of variance (ANOVA) in at least two ways (Bagiella et al., 2000): First, mixed effects models handle missing data more effectively because they are fitted by maximum likelihood. Second, mixed effects models allow for the specification of variance-covariance matrices. In contrast, multivariate analysis of variance (MANOVA) automatically assumes that the variance-covariance matrix is unstructured, whereas repeated-measures ANOVA uses compound symmetry.

The present dataset incorporated multiple repeated factors that were unequally spaced in time (e.g., time = min 1 to min 5; progress = pre-treatment to follow-up). Consequently, we first selected an unstructured variance-covariance matrix in SPSS 13.0 for the analyses in order not to make any assumptions about correlations of adjacent and distant elements of the variance-covariance matrix. Unfortunately, the models did not converge because too many iterations were needed. Next, we chose the second most appropriate option, which is AR1. For this matrix, we assume that the correlation between two adjacent elements is ρ, between two elements separated by a third ρ^2, and so on. A limitation of this approach is that the AR1 variance-covariance matrix option can only estimate the correlations between elements. For example, AR1 assumes that the correlation between min 4 and 5 of the R condition in the first Relaxation Test is ρ, the same value as the correlation between min 5 of R and min 1 of QS.

Alternatively, we could have chosen the compound symmetry variance covariance matrix. This matrix assumes constant variances and covariances among elements. In the planning stages of the study, this was only our third choice for theoretical reasons: We expected higher correlations between adjacent elements than elements that were further apart. For example, we expected anxiety scores in the GAD group between Session 1 and 2 to be more closely related to each other than scores from Session 1 and 12. Post-hoc, we found empirical evidence for this assumption in that the information criteria for model selection (we used the -2 restricted log likelihood information criterion from the SPSS 13.0 mixed-effects models output) were consistently smaller (and therefore better) with the AR1 than with the compound symmetry variance-covariance option.

We decided not to use covariates in our analyses, because we had no a-priori information indicating a need for covariates. This very conservative approach to data analysis protects the results from being complicated by needless variables, especially in the face of the many dependent variables that were tested separately. One way to avoid Type I error is to test many dependent variables simultaneously with multivariate procedures, such as MANOVA. We did not use this approach because (a) multivariate procedures make many assumptions that are harder to satisfy than their univariate counterparts (Norman & Streiner, 2000) and (b) it was not always clear which variables are related to each other conceptually and should therefore be included in a single analysis. For example, should the six EMG measures be entered into one analysis even though previous research has convincingly shown that there is no general tension factor (e.g., Fridlund et al., 1982; Fridlund et al., 1986)? In addition, using multivariate procedures in some domains but not others would have been confusing.

We also acknowledge that *regression to the mean* may confound the results of repeated measures analyses, even if no baseline differences are found. It has been suggested that the analysis of covariance (ANCOVA) of the post-treatment scores with pre-treatment values as a covariate is a superior approach to repeated measures ANOVA if certain assumptions are met (Vickers, 2001; Vickers & Altman, 2001). For the psychometric outcome, the analysis is straightforward: Pre-treatment would serve as the covariate, with the other four assessments being repeated measures. (This analysis did not produce notable differences.) However, the situation is more complex for the psychophysiological data during the Relaxation Test. For example, should one use the QS or R segment as a covariate in such model? We could not enter all data

from the pre-treatment assessment, because covariates should not be used if differences are expected a priori (e.g., height between boys and girls at certain ages). In our case, we expected differences between speech and QS and R. Our preliminary analyses indicated that such ANCOVAs became unstable with the choice of certain covariates.

Yet another approach would have been to eliminate the repeated measures factors by creating subject-specific slopes and intercepts, and testing differences between groups on those regression parameters (individual growth curve analysis, Norman & Streiner, 2000). We partially employed this approach in the correlational analyses but refrained from it in the mixed-effects model analyses because we would have tested slopes and intercepts separately, although they may interact. For the correlational analyses, we considered canonical correlation for our dataset because that allows for the investigation of two sets of dependent variables. Unfortunately, our dataset was too small: It has been suggested that canonical correlations should contain between 20 to 60 times as many cases as variables with a sample size of at least 50 (Barcikowski & Stevens, 1975; Stevens, 1986).

In conclusion, there was no single ideal way to analyze such a multifaceted data set. Every choice offered benefits but had drawbacks. Complex analyses are not that well understood and make many assumptions, some of which may be difficult to meet. Psychophysiological experiments measure many variables, which increase the probability of Type I error. We chose our statistical tests to be as simple as possible, but we remind the reader to keep in mind the number of statistical tests made when evaluating our conclusions.

Statistical power needs to be considered whenever hypothesized differences fail to reach significance. This study was adequately powered to tell us whether frontalis muscle tension differs between GAD patients and non-anxious controls at rest in a laboratory setting, and whether AR leads to a decrease in worry in GAD patients. We are less certain about the correlational analyses. We did not perform a pilot study before this project (for cautionary notes regarding the use of pilot studies for power calculations, see Kraemer, Mintz, Noda, Tinklenberg, & Yesavage, 2006). Hence, the conclusions from the correlational analysis are based on the idea that associations are unlikely to be clinically relevant if they are not significant in a GAD (n = 49) or AR (n = 29) sample of this size.[8]

Methodological Limitations

Several limitations of the study need to be mentioned. It is unclear whether participants rated themselves on mental or on bodily tension or both in the Customized Mood Questionnaires because we did not distinguish these constructs. Over the course of the study, it became clear that this differentiation could have added valuable information because people associate tension and relaxation with the mind or the body to varying degrees. As a result, we have created and are now using a Tension and Relaxation questionnaire (Roth et al., submitted) that assesses in detail how much mental and physical tension participants have had over the last two months. A second limitation to the study is that we did not include a worry period in the laboratory assessment. During the Relaxation Test, we only asked participants to sit quietly and

[8] The number of cases in a correlation could be considerably smaller than 49 and 29 in the GAD and AR group, respectively, because of dropout, exclusion due to medication, or missing data (particularly in correlations involving follow-up data). The correlation tables with the corresponding *n*s are presented in the appendix.

to relax. During the design of the study, we did not feel the need to induce worry in our participants because we assumed that untreated GAD patients would automatically worry during the laboratory assessment due to the chronic nature of GAD. However, having physiological data from GAD patients during worry and during recovery from worry (in QS and R) would have allowed us to examine the effects of MRT from yet another angle.

Our physiological data is confounded by medication use. We minimized pharmacological effects by excluding cardiovascular and electrodermal data of participants who were taking beta-blockers and antihistamines. Furthermore, we only included participants in the study who were on stable doses of medication. Nonetheless, we cannot be certain that these drugs did not affect the physiological measurements. Finally, the follow-up period in this study only lasted six weeks, when it is becoming more and more usual to reevaluate participants 6, 12, 24, and even 60 months after treatment completion.

Comparing AR only to a waiting condition may be misunderstood as a limitation. The waiting list design is not suitable for studies investigating whether a treatment offers more than nonspecific treatment effects, because conclusions can only be drawn about how the active treatment compares to a group that is in contact with study personnel but does not receive therapy. From a research perspective, a waiting control design was appropriate for this study, because we intended primarily to investigate the mechanisms of AR. Evaluating once again AR's clinical effectiveness in GAD was secondary. A drawback of the waiting list design is that some patients do not receive effective treatment until later. We monitored our waiting

list patients with the plan to withdraw them from the study and offer them a standard treatment if their symptoms worsened, which fortunately never occurred with our subjects. In addition, our WLC group did not complete the follow-up assessment, but was able to start treatment immediately after the fifth Relaxation Test.

Summary, Implications, and Outlook

In summary, we found that AR is at most modestly effective in the treatment of patients with a *DSM-IV* diagnosis of GAD. Electromyographic recordings do not initially distinguish GAD patients from non-anxious controls, and there is little evidence that GAD patients learn to relax muscles over the course of therapy. Within untreated GAD patients, anxiety is not related to physiological activation, and psychological improvement with treatment is not associated with physiological change.

We must bear in mind that MRT might still be useful in anxiety disorders, even though it does not reduce muscular tone. PD patients, for example, usually do not have increased muscular tone, but have been helped by MRT (e.g., Arntz & van den Hout, 1996; Carlbring, Ekselius, & Andersson, 2003). MRT training courses are often taken as stress-reduction technique similar to yoga and mindfulness-meditation and like them may work on a psychological rather than a physiological level.

However, our study does not give strong support to the idea that MRT works by teaching individuals an ability to profoundly relax their muscles. The physiologically oriented rationale of MRT seems unjustified, and other possibilities

have to be considered: MRT may work through cognitive change, for example by changing dysfunctional beliefs about worry or making the patient think that anxiety and the bodily changes that accompany it are understandable and controllable. Data from the Why Worry Scale supports these assumptions. After treatment, the GAD patients found worry to be less helpful for problem solving, less motivating, and less of a positive personality trait. In addition, the beliefs that worry prevents negative outcomes or protects from negative emotions in the event of a negative outcome were less strong after AR therapy. There are also other possible mechanisms of change. For example, MRT may work through exposure to worry in the therapeutic situation.

A broader implication of the study is that MRT may not be the best choice for GAD because (a) therapists provide a rationale that has no empirical basis and (b) its effectiveness is modest, at least when administered by professionals without extensive patient experience. The latter is especially unfortunate, as we had previously assumed that "the cost of MRT should be less than that of cognitive or emotion-oriented methods because MRT can be applied in standardized ways requiring less therapist training" (Conrad & Roth, in press). Cognitive therapy seems more relevant to the kind of GAD as diagnosed by *DSM-IV* than MRT, because worry and intrusive thoughts are more cognitive than somatic.

An unexpected byproduct of this work is the discovery that many chronic anxiety patients have become diagnostic "orphans", who fall outside the purview of most psychological and pharmaceutical research, and consequently whose treatment with medication is prejudiced as "off label" because the current GAD criteria have defined a cognitive subtype of chronic anxiety that covers only some sufferers. We

have been investigating the wider spectrum of chronic anxiety by comparing the psychophysiological characteristics of *DSM-IV* GAD patients, volunteers who describe themselves as chronically *tense*, and non-anxious controls. Initial results indicate that this broader group of tense individuals is characterized by chronic autonomic activation (Roth et al., submitted), possibly indicating that physiologically oriented treatments aimed at somatic deactivation, for example CO_2 biofeedback (Meuret, Wilhelm, Ritz, & Roth, 2003; Meuret, Wilhelm, & Roth, 2004) and MRT, would be more suitable for this group than for *DSM-IV* diagnosed GAD patients. Research like this may lead to a reconfiguring of diagnostic categories in *DSM-V* that will enfranchise this currently undiagnosable group.

References

Alexander, A. B. (1975). An experimental test of assumptions relating to the use of electromyographic biofeedback as a general relaxation training technique. *Psychophysiology, 12*(6), 656-662.

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington D. C.: Author.

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd-R ed.). Washington D. C.: Author.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington D. C.: Author.

Andreassi, J. L. (2000). *Psychophysiology: Human behavior and physiological response*. Mahwah, NJ: Lawrence Erlbaum Associates.

Anthony, M. M., Orsillo, S. M., & Roemer, L. (2001). *Practitioner's guide to empirically based measures of anxiety*. New York: Kluwer Academic/Plenum Publishers.

Arntz, A. (2003). Cognitive therapy versus applied relaxation as treatment of generalized anxiety disorder. *Behaviour Research and Therapy, 41*(6), 633-646.

Arntz, A., & van den Hout, M. (1996). Psychological treatments of panic disorder without agoraphobia: Cognitive therapy versus applied relaxation. *Behaviour Research and Therapy, 34*(2), 113-121.

Bagiella, E., Sloan, R. P., & Heitjan, D. F. (2000). Mixed-effects models in psychophysiology. *Psychophysiology, 37*(1), 13-20.

Barcikowski, R., & Stevens, J. P. (1975). A Monte Carlo study of the stability of canonical correlations, canonical weights, and canonical variate-variable correlations. *Multivariate Behavioral Research, 10*, 353-364.

Barlow, D. H., Allen, L. B., & Choate, M. L. (2004). Toward a unified treatment for emotional disorders. *Behavior Therapy, 35*, 205-230.

Barlow, D. H., Blanchard, E. B., Vermilyea, J. A., Vermilyea, B. B., & DiNardo, P. A. (1986). Generalized anxiety and generalized anxiety disorder: Description and reconceptualization. *American Journal of Psychiatry, 143*(1), 40-44.

Barlow, D. H., Cohen, A. S., Waddell, M. T., Vermilyea, B. B., Klosko, J. S., Blanchard, E. B., et al. (1984). Panic and generalized anxiety disorders: Nature and treatment. *Behavior Therapy, 15*, 431-449.

Barrett-Lennard, G. T. (1986). The relationship inventory now: Issues and advances in theory, method, and use. In L. S. Greenberg & W. Pinsof (Eds.), *The psychotherapeutic process: A research handbook*. New York, NY: Guilford Press.

Basmajian, J. V., Blumenstein, R., & Dismatsek, M. (1980). *Electrode placement in EMG biofeedback*. Baltimore, MD: Williams & Wilkins.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56*, 893-897.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 41*, 561-571.

Beck, J. G., Stanley, M. A., Baldwin, L. E., Deagle, E. A., 3rd, & Averill, P. M. (1994). Comparison of cognitive therapy and relaxation training for panic disorder. *Journal of Consulting and Clinical Psychology, 62*(4), 818-826.

Bernstein, D. A., & Borkovec, T. D. (1973). *Progressive relaxation training: A manual for the helping professions*. Champaign, IL: Research Press.

Bonferroni, C. E. (1936). Teoria statistica delle classi e calcolo delle probabilità. *Pubblicazioni del R Istituto Superiore di Scienze Economiche e Commerciali di Firenze, 8*, 3-62.

Borkovec, T. D., Alcaine, O. M., & Behar, E. (2004). Avoidance theory of worry and generalized anxiety disorder. In R. G. Heimberg, C. L. Turk & D. S. Mennin (Eds.), *Generalized anxiety disorder: Advances in research and practice*. New York: Guilford Press.

Borkovec, T. D., & Costello, E. (1993). Efficacy of applied relaxation and cognitive-behavioral therapy in the treatment of generalized anxiety disorder. *Journal of Consulting and Clinical Psychology, 61*(4), 611-619.

Borkovec, T. D., Grayson, J. B., & Cooper, K. M. (1978). Treatment of general tension: Subjective and physiological effects of progressive relaxation. *Journal of Consulting and Clinical Psychology, 46*(3), 518-528.

Borkovec, T. D., & Krogh-Sides, J. (1979). Critical procedural variables related to the physiological effects of progressive relaxation: A review. *Behaviour Research and Therapy, 17*(2), 119-125.

Borkovec, T. D., & Nau, S. D. (1972). Credibility of analogue therapy rationales. *Journal of Behavior Therapy and Experimental Psychiatry, 3*, 257-260.

Borkovec, T. D., Newman, M. G., Pincus, A. L., & Lytle, R. (2002). A component analysis of cognitive-behavioral therapy for generalized anxiety disorder and

the role of interpersonal problems. *Journal of Consulting and Clinical Psychology, 70*(2), 288-298.

Bowles, C., Smith, J., & Parker, K. (1979). EMG biofeedback and progressive relaxation training: A comparative study of two groups of normal subjects. *Western Journal of Nursing Research, 1*(3), 179-189.

Burish, T. G., Hendrix, E. M., & Frost, R. O. (1981). Comparison of frontal EMG biofeedback and several types of relaxation instructions in reducing multiple indices of arousal. *Psychophysiology, 18*(5), 594-602.

Canter, A., Kondo, C. Y., & Knott, J. R. (1975). A comparison of EMG feedback and progressive muscle relaxation training in anxiety neurosis. *British Journal of Psychiatry, 127*, 470-477.

Carlbring, P., Ekselius, L., & Andersson, G. (2003). Treatment of panic disorder via the Internet: A randomized trial of CBT vs applied relaxation. *Journal of Behavior Therapy and Experimental Psychiatry, 34*(2), 129-140.

Carlson, C. R., Collins, F. L., Jr., Nitz, A. J., Sturgis, E. T., & Rogers, J. L. (1990). Muscle stretching as an alternative relaxation training procedure. *Journal of Behavior Therapy and Experimental Psychiatry, 21*(1), 29-38.

Carlson, J. G., Basilio, C. A., & Heaukulani, J. D. (1983). Transfer of EMG training: Another look at the general relaxation issue. *Psychophysiology, 20*, 530-536.

Chatoor, I., & Krupnick, J. (2001). The role of non-specific factors in treatment outcome of psychotherapy studies. *European Child And Adolescent Psychiatry, 10 Suppl 1*, I19-25.

Christoph, P., Luborsky, L., Kron, R., & Fishman, H. (1978). Blood pressure, heart rate and respiratory responses to a single session of relaxation: A partial replication. *Journal of Psychosomatic Research, 22*(6), 493-501.

Cohen, H., Benjamin, J., Geva, A. B., Matar, M. A., Kaplan, Z., & Kotler, M. (2000). Autonomic dysregulation in panic disorder and in post-traumatic stress disorder: Application of power spectrum analysis of heart rate variability at rest and in response to recollection of trauma or panic attacks. *Psychiatry Research, 96*(1), 1-13.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.

Connor, W. H. (1974). Effects of brief relaxation training on autonomic response to anxiety-evoking stimuli. *Psychophysiology, 11*(5), 591-599.

Conrad, A., & Roth, W. T. (in press). Muscle relaxation therapy for anxiety disorders: It works but how? *Journal of Anxiety Disorders*.

Cuthbert, B. N., Lang, P. J., Strauss, C., Drobes, D., Patrick, C. J., & Bradley, M. M. (2003). The psychophysiology of anxiety disorder: Fear memory imagery. *Psychophysiology, 40*(3), 407-422.

Davidson, P. O., & Hiebert, S. F. (1971). Relaxation training, relaxation instruction, and repeated exposure to a stressor film. *Journal of Abnormal Psychology, 78*(2), 154-159.

Davison, G. C. (1966). Anxiety under total curarization: Implications for the role of muscular relaxation in the desensitization of neurotic fears. *Journal of Nervous and Mental Disease, 143*(5), 443-448.

DeVries, H. A. (1965). Muscle tonus in postural muscles. *American Journal of Physical Medicine, 44*, 275-291.

DiNardo, P. A., Brown, T. A., & Barlow, D. H. (1994). *Anxiety disorders interview schedule for DSM-IV: Adult version (ADIS-IV).* Albany, NY: Graywind Publications Inc.

Fee, R. A., & Girdano, D. A. (1978). The relative effectiveness of three techniques to induce the trophotropic response. *Biofeedback and Self-Regulation, 3*(2), 145-157.

Freeston, M. H., Rheaume, J., Letarte, H., Dugas, M. J., & Ladouceur, R. (1994). Why do people worry? *Personality and Individual Differences, 17*, 791-802.

Fridlund, A. J., & Cacioppo, J. T. (1986). Guidelines for human electromyographic research. *Psychophysiology, 23*(5), 567-589.

Fridlund, A. J., Cottam, G. L., & Fowler, S. C. (1982). In search of the general tension factor: Tensional patterning during auditory stimulation. *Psychophysiology, 19*, 136-145.

Fridlund, A. J., Fowler, S. C., & Pritchard, D. A. (1980). Striate muscle tensional patterning in frontalis EMG biofeedback. *Psychophysiology, 17*(1), 47-55.

Fridlund, A. J., Hatfield, M. E., Cottam, G. L., & Fowler, S. C. (1986). Anxiety and striate-muscle activation: Evidence from electromyographic pattern analysis. *Journal of Abnormal Psychology, 95*(3), 228-236.

Gellhorn, E., & Kiely, W. F. (1972). Mystical states of consciousness: Neurophysiological and clinical aspects. *Journal of Nervous and Mental Disease, 154*, 399-405.

Grawe, K., Bernauer, F., & Donati, R. (1990). Psychotherapie im Vergleich. Haben wirklich alle einen Preis verdient? *Psychotherapie, Psychosomatik, und Medizinische Psychologie, 40*(3-4), 102-114.

Grawe, K., Donati, R., & Bernauer, F. (2001). *Psychotherapie im Wandel: Von der Konfession zur Profession* (5th ed.). Göttingen: Hogrefe.

Greist, J. H., Marks, I. M., Baer, L., Kobak, K. A., Wenzel, K. W., Hirsch, M. J., et al. (2002). Behavior therapy for obsessive-compulsive disorder guided by a computer or by a clinician compared with relaxation as a control. *Journal of Clinical Psychiatry, 63*(2), 138-145.

Haynes, S. N., Moseley, D., & McGowan, W. T. (1975). Relaxation training and biofeedback in the reduction of frontalis muscle tension. *Psychophysiology, 12*(5), 547-552.

Hazlett, R. L., McLeod, D. R., & Hoehn-Saric, R. (1994). Muscle tension in generalized anxiety disorder: Elevated muscle tonus or agitated movement? *Psychophysiology, 31*(2), 189-195.

Heide, F. J., & Borkovec, T. D. (1984). Relaxation-induced anxiety: Mechanisms and theoretical implications. *Behaviour Research and Therapy, 22*(1), 1-12.

Hillenberg, J. B., & Collins, F. L., Jr. (1983). The importance of home practice for progressive relaxation training. *Behaviour Research and Therapy, 21*(6), 633-642.

Hochberg, Y. (1988). A sharper Bonferroni procedure for multiple tests of significance. *Biometrika, 75*, 800-802.

Hoehn-Saric, R. (1982). Comparison of generalized anxiety disorder with panic disorder patients. *Psychopharmacological Bulletin, 18*(4), 104-108.

Hoehn-Saric, R., Hazlett, R. L., & McLeod, D. R. (1993). Generalized anxiety disorder with early and late onset of anxiety symptoms. *Comprehensive Psychiatry, 34*(5), 291-298.

Hoehn-Saric, R., Hazlett, R. L., Pourmotabbed, T., & McLeod, D. R. (1997). Does muscle tension reflect arousal? Relationship between electromyographic and electroencephalographic recordings. *Psychiatry Research, 71*(1), 49-55.

Hoehn-Saric, R., & Masek, B. J. (1981). Effects of naloxone on normals and chronically anxious patients. *Biological Psychiatry, 16*(11), 1041-1050.

Hoehn-Saric, R., & McLeod, D. R. (1988). The peripheral sympathetic nervous system. Its role in normal and pathologic anxiety. *Psychiatric Clinics of North America, 11*(2), 375-386.

Hoehn-Saric, R., & McLeod, D. R. (2000). Anxiety and arousal: Physiological changes and their perception. *Journal of Affective Disorders, 61*(3), 217-224.

Hoehn-Saric, R., McLeod, D. R., Funderburk, F., & Kowalski, P. (2004). Somatic symptoms and physiologic responses in generalized anxiety disorder and panic disorder: An ambulatory monitor study. *Archives of General Psychiatry, 61*(9), 913-921.

Hoehn-Saric, R., McLeod, D. R., & Zimmerli, W. D. (1989). Somatic manifestations in women with generalized anxiety disorder. Psychophysiological responses to psychological stress. *Archives of General Psychiatry, 46*(12), 1113-1119.

Hoehn-Saric, R., McLeod, D. R., & Zimmerli, W. D. (1991). Psychophysiological response patterns in panic disorder. *Acta Psychiatrica Scandinavica, 83*(1), 4-11.

Holden, A. E., & Barlow, D. H. (1986). Heart rate and heart rate variability recorded in vivo in agoraphobics and nonphobics. *Behavior Therapy, 17*, 26-42.

Horvath, A. O., & Greenberg, L. S. (1989). Development and validation of the working alliance inventory. *Journal of Counseling Psychology, 36*, 223-233.

Hyman, R. B., Feldman, H. R., Harris, R. B., Levin, R. F., & Malloy, G. B. (1989). The effects of relaxation training on clinical symptoms: A meta-analysis. *Nursing Research, 38*(4), 216-220.

Jacobson, E. (1934a). Electrical measurements concerning muscular contraction (tonus) and the cultivation of relaxation in man: Relaxation times of individuals. *American Journal of Physiology, 108*, 573-580.

Jacobson, E. (1934b). Electrical measurements concerning muscular contraction (tonus) and the cultivation of relaxation in man: Studies on arm flexors. *American Journal of Physiology, 107*, 230-248.

Jacobson, E. (1938). *Progressive relaxation* (2nd ed.). Chicago: University of Chicago Press.

Jacobson, E. (1964). *Anxiety and tension control: A physiologic approach*. Philadelphia: Lippincott.

Jacobson, E. (1970). *Modern treatment of tense patients*. Springfield, IL: Charles C. Thomas.

Jacobson, N. S., Follette, W. C., & Revenstorf, D. (1984). Psychotherapy outcome research: Methods for reporting variability and evaluating clinical significance. *Behavior Therapy*(15), 336-352.

Jerremalm, A., Jansson, L., & Öst, L. G. (1986a). Cognitive and physiological reactivity and the effects of different behavioral methods in the treatment of social phobia. *Behaviour Research and Therapy, 24*(2), 171-180.

Jerremalm, A., Jansson, L., & Öst, L. G. (1986b). Individual response patterns and the effects of different behavioral methods in the treatment of dental phobia. *Behaviour Research and Therapy, 24*(5), 587-596.

Jones, G. E., & Evans, P. A. (1981). Effectiveness of frontalis feedback training in producing general body relaxation. *Biological Psychiatry, 12*(4), 313-320.

Jorm, A. F., Christensen, H., Griffiths, K. M., Parslow, R. A., Rodgers, B., & Blewitt, K. A. (2004). Effectiveness of complementary and self-help treatments for anxiety disorders. *Medical Journal of Australia, 181*(7 Suppl), S29-46.

Katkin, E. S., Morell, M. A., & Goldbond, S. (1982). Individual differences in heart beat discrimination. *Psychophysiology, 19*, 160-166.

King, N. J. (1980). Abbreviated progressive relaxation. In M. Hersen, R. M. Eisler & P. M. Miller (Eds.), *Progress in behavior modification* (pp. 147-182). New York: Academic Press.

Kollai, M., & Kollai, B. (1992). Cardiac vagal tone in generalized anxiety disorder. *British Journal of Psychiatry, 161*, 831-835.

Kraemer, H. C., & Blasey, C. M. (2004). Centering in regression analyses: A strategy to prevent errors in statistical inference. *International Journal of Methods in Psychiatric Research, 13*(3), 141-151.

Kraemer, H. C., Mintz, J., Noda, A., Tinklenberg, J., & Yesavage, J. A. (2006). Caution regarding the use of pilot studies to guide power calculations for study proposals. *Archives of General Psychiatry, 63*(5), 484-489.

Kraemer, H. C., & Thiemann, S. (1988). *How many subjects? Statistical power analysis in research*. Newbury Park, CA: Sage Publications.

Lacey, J. I., Bateman, D. E., & Vanlehn, R. (1953). Autonomic response specificity: An experimental study. *Psychosomatic Medicine, 15*(1), 8-21.

Lacey, J. I., & Van, L. R. (1952). Differential emphasis in somatic response to stress: An experimental study. *Psychosomatic Medicine, 14*(2), 71-81.

Lang, P. J., Davis, M., & Ohman, A. (2000). Fear and anxiety: Animal models and human cognitive psychophysiology. *Journal of Affective Disorders, 61*(3), 137-159.

Leboeuf, A., & Lodge, J. (1980). A comparison of frontalis EMG feedback training and progressive relaxation in the treatment of chronic anxiety. *British Journal of Psychiatry, 137*, 279-284.

Lehrer, P. M. (1978). Psychophysiological effects of progressive relaxation in anxiety neurotic patients and of progressive relaxation and alpha feedback in nonpatients. *Journal of Consulting and Clinical Psychology, 46*(3), 389-404.

Lehrer, P. M., Schoicket, S., Carrington, P., & Woolfolk, R. L. (1980). Psychophysiological and cognitive responses to stressful stimuli in subjects practicing progressive relaxation and clinically standardized meditation. *Behaviour Research and Therapy, 18*(4), 293-303.

Lehrer, P. M., Woolfolk, R. L., Rooney, A. J., McCann, B., & Carrington, P. (1983). Progressive relaxation and meditation. A study of psychophysiological and therapeutic differences between two techniques. *Behaviour Research and Therapy, 21*(6), 651-662.

Lohaus, A., Klein-Hessling, J., Vogele, C., & Kuhn-Hennighausen, C. (2001). Psychophysiological effects of relaxation training in children. *British Journal of Health Psychology, 6*(Pt 2), 197-206.

Lohr, J. M., DeMaio, C., & McGlynn, F. D. (2003). Specific and nonspecific treatment factors in the experimental analysis of behavioral treatment efficacy. *Behavior Modification, 27*(3), 322-368.

Lundgren, J., Carlsson, S. G., & Berggren, U. (2006). Relaxation versus cognitive therapies for dental fear--a psychophysiological approach. *Health Psychology, 25*(3), 267-273.

Lyonfields, J. D., Borkovec, T. D., & Thayer, J. F. (1995). Vagal tone in generalized anxiety disorder and the effects of aversive imagery and worrysome thinking. *Behavior Therapy, 26*, 457-466.

Marks, I. M., O'Dwyer, A., Meehan, O., Greist, J. H., Baer, L., & McGuire, P. (2000). Subjective imagery in obsessive-compulsive disorder before and after exposure therapy. Pilot randomized controlled trial. *British Journal of Psychiatry, 176*, 387-391.

Marks, I. M., Swinson, R. P., Basoglu, M., Kuch, K., Noshirvani, H., O'Sullivan, G., et al. (1993). Alprazolam and exposure alone and combined in panic disorder with agoraphobia. A controlled study in London and Toronto. *British Journal of Psychiatry, 162*, 776-787.

Marten, P. A., Brown, T. A., Barlow, D. H., Borkovec, T. D., Shear, M. K., & Lydiard, R. B. (1993). Evaluation of the ratings comprising the associated symptom criterion of DSM-III-R generalized anxiety disorder. *Journal of Nervous and Mental Disease, 181*(11), 676-682.

Mathews, A. M. (1971). Psychophysiological approaches to the investigation of desensitization and related procedures. *Psychological Bulletin, 76*(2), 73-91.

Mathews, A. M., & Gelder, M. G. (1969). Psycho-physiological investigations of brief relaxation training. *Journal of Psychosomatic Research, 13*(1), 1-12.

Mauss, I. B., Levenson, R. W., McCarter, L., Wilhelm, F. H., & Gross, J. J. (2005). The tie that binds? Coherence among emotion experience, behavior, and physiology. *Emotion, 5*(2), 175-190.

McLeod, D. R., Hoehn-Saric, R., & Stefan, R. L. (1986). Somatic symptoms of anxiety: Comparison of self-report and physiological measures. *Biological Psychiatry, 21*(3), 301-310.

Mennin, D. S., Heimberg, R. G., & Turk, C. L. (2004). Clinical presentation and diagnostic features. In R. G. Heimberg, C. L. Turk & D. S. Mennin (Eds.), *Generalized anxiety disorder: Advances in research and practice*. New York: Guilford Press.

Mercer, J. A., Bezodis, N., Delion, D., Zachry, T., & Rubley, M. D. (2006). EMG sensor location: Does it influence the ability to detect differences in muscle contraction conditions? *Journal of Electromyography and Kinesiology, 16*(2), 198-204.

Meuret, A. E., Wilhelm, F. H., Ritz, T., & Roth, W. T. (2003). Breathing training for treating panic disorder. Useful intervention or impediment? *Behavior Modification, 27*(5), 731-754.

Meuret, A. E., Wilhelm, F. H., & Roth, W. T. (2004). Respiratory feedback for treating panic disorder. *Journal of Clinical Psychology, 60*(2), 197-207.

Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy, 28*(6), 487-495.

Michelson, L., Mavissakalian, M., & Marchione, K. (1985). Cognitive and behavioral treatments of agoraphobia: Clinical, behavioral, and psychophysiological outcomes. *Journal of Consulting and Clinical Psychology, 53*(6), 913-925.

Michelson, L., Mavissakalian, M., Marchione, K., Ulrich, R. F., Marchione, N., & Testa, S. (1990). Psychophysiological outcome of cognitive, behavioral and

psychophysiologically-based treatments of agoraphobia. *Behaviour Research and Therapy, 28*(2), 127-139.

Miller, M. P., Murphy, P. J., Miller, T. P., Awan, N. A., Miller, R. R., Specht, K., et al. (1978). Comparison of electromyographic feedback and progressive relaxation training in treating circumscribed anxiety stress reactions. *Journal of Consulting and Clinical Psychology, 46*(6), 1291-1298.

Nezu, A. M., Ronan, G. F., Meadows, E. A., & McClure, K. S. (2000). *Practitioner's guide to empirically based measures of depression*. New York: Kluwer Academic/Plenum Publishers.

Norman, R. G., & Streiner, D. L. (2000). *Biostatistics: The bare essentials*. Lewiston, NY: B.C. Decker, Inc.

O'Connell, M. F., & Yeaton, S. P. (1981). Generalized muscle changes during EMG relaxation training. *Psychophysiology, 18*(1), 56-61.

Öst, L. G. (1987). Applied relaxation: Description of a coping technique and review of controlled studies. *Behaviour Research and Therapy, 25*(5), 397-409.

Öst, L. G., & Breitholtz, E. (2000). Applied relaxation vs cognitive therapy in the treatment of generalized anxiety disorder. *Behaviour Research and Therapy, 38*(8), 777-790.

Öst, L. G., Jerremalm, A., & Jansson, L. (1984). Individual response patterns and the effects of different behavioral methods in the treatment of agoraphobia. *Behaviour Research and Therapy, 22*(6), 697-707.

Öst, L. G., Jerremalm, A., & Johansson, J. (1981). Individual response patterns and the effects of different behavioral methods in the treatment of social phobia. *Behaviour Research and Therapy, 19*(1), 1-16.

Öst, L. G., Johansson, J., & Jerremalm, A. (1982). Individual response patterns and the effects of different behavioral methods in the treatment of claustrophobia. *Behaviour Research and Therapy, 20*(5), 445-460.

Öst, L. G., Lindahl, I. L., Sterner, U., & Jerremalm, A. (1984). Exposure in vivo vs applied relaxation in the treatment of blood phobia. *Behaviour Research and Therapy, 22*(3), 205-216.

Öst, L. G., Sterner, U., & Fellenius, J. (1989). Applied tension, applied relaxation, and the combination in the treatment of blood phobia. *Behaviour Research and Therapy, 27*(2), 109-121.

Park, J. M., Mataix-Cols, D., Marks, I. M., Ngamthipwatthana, T., Marks, M., Araya, R., et al. (2001). Two-year follow-up after a randomized controlled trial of self- and clinician-accompanied exposure for phobia/panic disorders. *British Journal of Psychiatry, 178*, 543-548.

Paul, G. L. (1969). Physiological effects of relaxation training and hypnotic suggestion. *Journal of Abnormal Psychology, 74*(4), 425-437.

Pennebaker, J. W. (1981). Stimulus characteristics influencing estimation of heart rate. *Psychophysiology, 18*, 540-548.

Pennebaker, J. W. (1982). *The psychology of physical symptoms*. New York: Springer Verlag.

Ralston, H. J., & Libet, B. (1953). The question of tonus in skeletal muscle. *American Journal of Physical Medicine, 32*, 85-92.

Reinking, R. H., & Kohl, M. L. (1975). Effects of various forms of relaxation training on physiological and self-report measures of relaxation. *Journal of Consulting and Clinical Psychology, 43*(5), 595-600.

Roth, W. T., Doberenz, S., Mueller, A., Wollburg, E., Conrad, A., Taylor, C. B., et al. (submitted). Generalized anxiety disorder: Whom are we missing? *American Journal of Psychiatry*.

Roth, W. T., Ehlers, A., Taylor, C. B., Margraf, J., & Agras, W. S. (1990). Skin conductance habituation in panic disorder patients. *Biological Psychiatry, 27*(11), 1231-1243.

Roth, W. T., Telch, M. J., Taylor, C. B., Sachitano, J. A., Gallen, C. C., Kopell, M. L., et al. (1986). Autonomic characteristics of agoraphobia with panic attacks. *Biological Psychiatry, 21*(12), 1133-1154.

Roth, W. T., Wilhelm, F. H., & Pettit, D. (2005). Are current theories of panic falsifiable? *Psychological Bulletin, 131*(2), 171-192.

Roth, W. T., Wilhelm, F. H., & Trabert, W. (1998). Autonomic instability during relaxation in panic disorder. *Psychiatry Research, 80*(2), 155-164.

Rottenberg, J., Wilhelm, F. H., Gross, J. J., & Gotlib, I. H. (2002). Respiratory sinus arrhythmia as a predictor of outcome in major depressive disorder. *Journal of Affective Disorders, 71*(1-3), 265-272.

Saul, J. P., Berger, R. D., Albrecht, P., Stein, S. P., Chen, M. H., & Cohen, R. J. (1991). Transfer function analysis of the circulation: Unique insights into cardiovascular regulation. *American Journal of Physiology, 261*(4 Pt 2), H1231-1245.

Schandler, S. L., & Grings, W. W. (1976). An examination of methods for producing relaxation during short-term laboratory sessions. *Behaviour Research and Therapy, 14*(6), 419-426.

Schwartz, G. E., Davidson, R. J., & Goleman, D. J. (2000). Cognitive somatic anxiety questionnaire (CSAQ). In C. K & F. J (Eds.), *Measures for clinical practice: A sourcebook*. New York: Free Press.

Shaffer, J. P. (1995). Multiple hypothesis testing. *Annual Review of Psychology, 46*, 561-584.

Shapiro, S., & Lehrer, P. M. (1980). Psychophysiological effects of autogenic training and progressive relaxation. *Biofeedback and Self-Regulation, 5*(2), 249-255.

Shedivy, D. I., & Kleinman, K. M. (1977). Lack of correlation between frontalis EMG and either neck EMG or verbal ratings of tension. *Psychophysiology, 14*(2), 182-186.

Smith, S. M., Brown, H. O., Toman, J. E. P., & Goodman, L. S. (1947). The lack of cerebral effects of d-tubocurarine. *Anesthesiology, 8*, 1-14.

Solomon, R. L., & Turner, L. H. (1962). Discriminative classical conditioning in dogs paralyzed by curare can later control discriminative avoidance responses in the normal state. *Psychological Review, 69*, 202-219.

Stevens, J. P. (1986). *Applied multivariate statistics for the social sciences*. Hillsdale, NJ: Erlbaum.

Thayer, J. F., Friedman, B. H., & Borkovec, T. D. (1996). Autonomic characteristics of generalized anxiety disorder and worry. *Biological Psychiatry, 39*(4), 255-266.

Turk, C. L., Heimberg, R. G., & Mennin, D. S. (2004). Assessment. In R. G. Heimberg, C. L. Turk & D. S. Mennin (Eds.), *Generalized anxiety disorder: Advances in research and practice*. New York: Guilford Press.

Tyrer, P., Lee, I., & Alexander, J. (1980). Awareness of cardiac function in anxious, phobic and hypochondriacal patients. *Psychological Medicine, 10*, 171-174.

Vickers, A. J. (2001). The use of percentage change from baseline as an outcome in a controlled trial is statistically inefficient: A simulation study. *BMC Medical Research Methodology, 1*, 6.

Vickers, A. J., & Altman, D. G. (2001). Statistics notes: Analyzing controlled trials with baseline and follow up measurements. *British Medical Journal, 323*(7321), 1123-1124.

Vossel, G., & Zimmer, H. (1990). Psychometric properties of non-specific electrodermal response frequency for a sample of male students. *International Journal of Psychophysiology, 10*(1), 69-73.

Wilhelm, F. H., Gerlach, A. L., & Roth, W. T. (2001). Slow recovery from voluntary hyperventilation in panic disorder. *Psychosomatic Medicine, 63*(4), 638-649.

Wilhelm, F. H., & Roth, W. T. (2001). The somatic symptom paradox in DSM-IV anxiety disorders: Suggestions for a clinical focus in psychophysiology. *Biological Psychology, 57*(1-3), 105-140.

Wilhelm, F. H., Trabert, W., & Roth, W. T. (2001). Physiologic instability in panic disorder and generalized anxiety disorder. *Biological Psychiatry, 49*(7), 596-605.

Wolpe, W. (1952a). Experimental neurosis as a learned behavior. *British Journal of Psychology, 43*, 243.

Wolpe, W. (1952b). The formation of negative habits: A neurophysiological view. *Psychological Review, 59*, 290-404.

Wolpe, W. (1958). *Psychotherapy by reciprocal inhibition*. Stanford, CA: Stanford University Press.

Appendix

Table A1

Numbers, Means, and Standard Deviations of the Main Outcome Measures at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Primary measures																											
Self-rating of anxiety	29	7.34	1.74	20	6.80	1.74	21	1.19	1.69	24	6.96	1.76	17	6.35	2.23	20	1.35	1.66	21	5.43	1.99	16	6.06	2.26	18	1.17	1.15
Self-rating of worry	29	7.28	2.12	20	6.75	1.97	21	1.19	1.72	24	7.08	1.77	17	6.88	2.20	20	0.65	1.27	21	5.38	2.25	16	6.38	2.47	18	0.61	0.85
Self-rating of relaxation	29	2.90	1.59	20	2.70	2.11	21	7.14	2.10	24	3.17	2.06	16	3.19	1.60	20	6.85	2.66	21	4.29	1.98	16	3.69	2.12	18	7.22	2.73
BAI	29	23.24	16.04	20	17.95	5.98	21	2.24	3.90	24	22.58	14.73	17	16.41	7.69	20	1.35	1.76	21	18.48	14.72	16	14.19	7.69	18	1.28	2.99
PSWQ	28	65.79	9.25	20	64.20	7.56	21	27.38	6.09	24	66.25	7.05	16	65.06	7.95	20	29.50	9.45	21	61.71	10.00	16	62.38	7.86	18	28.83	7.80
PSS	27	24.85	4.65	19	23.53	4.57	19	6.42	4.34	23	26.17	5.13	17	22.29	5.51	19	9.37	5.80	21	22.62	5.77	16	23.06	5.93	17	6.18	5.15
Secondary measures																											
BDI	29	15.69	7.03	20	13.95	6.05	21	1.10	1.55	24	16.63	7.64	17	14.53	6.46	20	1.80	2.42	21	13.81	7.97	16	15.25	7.72	17	1.59	2.03
CSAI - cognitive subscale	29	22.45	6.05	20	22.50	5.84	21	7.90	1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSAI - somatic subscale	29	19.72	5.68	20	18.80	5.53	21	8.71	2.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RRA	29	27.34	7.00	20	26.90	6.42	21	12.10	3.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WW-II – total	29	50.52	16.42	20	44.95	15.60	21	35.95	14.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WW-II - aids in problem-solving subscale	29	11.00	4.03	20	10.15	4.61	21	7.90	3.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WW-II - motivates subscale	29	11.24	4.04	20	10.85	4.60	21	7.95	3.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WW-II - protects from neg. emotions in the event of a neg. outcome subscale	29	9.79	4.08	20	8.70	3.73	21	6.33	2.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WW-II - prevents neg. outcomes subscale	29	8.59	3.17	20	6.95	2.46	21	6.62	2.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WW-II – pos. personality trait subscale	29	9.90	3.92	20	8.30	3.89	21	7.14	3.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Primary measures	18	4.28	2.27	16	6.06	2.08	18	1.17	1.62	17	3.71	2.05	15	5.53	2.10	18	1.39	1.94	14	4.93	2.20	19	0.95	1.47
Self-rating of anxiety	18	4.56	2.62	16	6.25	2.41	18	0.44	0.98	17	3.41	2.67	15	5.73	2.02	18	1.11	2.27	14	4.86	2.93	19	1.00	1.80
Self-rating of worry	18	4.67	1.94	16	3.19	1.94	18	6.72	2.49	17	4.88	1.93	15	2.60	1.99	18	6.83	2.15	14	4.71	2.81	19	5.95	2.55
Self-rating of relaxation	18	11.61	10.14	16	15.56	10.11	18	1.28	2.40	17	11.59	12.11	15	12.13	6.86	18	1.22	1.93	14	17.00	13.95	19	2.05	3.49
BAI	18	56.67	10.34	16	60.63	8.45	18	28.61	9.49	17	53.29	12.83	15	59.00	10.45	18	27.61	8.68	14	47.93	12.23	19	31.53	7.31
PSWQ	18	21.56	6.65	16	22.44	6.41	18	6.50	4.46	17	19.35	7.63	15	22.93	4.73	18	6.39	5.10	14	19.14	7.94	17	8.47	6.09
PSS																								
Secondary measures	18	11.44	8.26	16	12.56	7.31	18	1.11	1.75	17	11.59	7.37	15	12.67	8.37	18	0.83	1.69	14	12.50	6.25	19	1.42	2.01
BDI	-	-	-	-	-	-	-	-	-	17	18.47	6.92	13	21.00	6.04	16	8.31	1.82	14	18.71	6.70	18	8.06	1.66
CSAI - cognitive subscale	-	-	-	-	-	-	-	-	-	17	16.35	3.98	13	18.00	6.78	16	8.94	2.08	14	17.93	6.49	18	9.50	2.79
CSAI - somatic subscale	-	-	-	-	-	-	-	-	-	17	19.65	8.38	13	26.85	5.83	16	13.06	4.92	14	21.14	10.22	19	13.21	5.51
RRA	-	-	-	-	-	-	-	-	-	16	43.25	11.08	13	46.92	17.16	16	38.00	14.41	13	43.54	12.76	18	33.06	9.87
WW-II – total	-	-	-	-	-	-	-	-	-	16	9.00	2.85	13	10.38	4.01	16	8.13	3.81	13	8.92	3.64	18	7.39	3.11
WW-II - aids in problem-solving subscale	-	-	-	-	-	-	-	-	-	16	9.75	2.74	13	10.92	4.33	16	8.50	3.43	13	10.85	3.24	18	7.44	3.11
WW-II - motivates subscale	-	-	-	-	-	-	-	-	-	16	9.00	3.50	13	9.69	5.25	16	6.88	3.10	13	8.08	3.75	18	5.83	1.10
WW-II - protects from neg. emotions in the event of a neg. outcome subscale	-	-	-	-	-	-	-	-	-	16	7.31	2.33	13	7.38	2.06	16	6.81	2.90	13	7.62	2.57	18	5.78	1.40
WW-II - prevents neg. outcomes subscale	-	-	-	-	-	-	-	-	-	16	8.19	2.29	13	8.54	4.10	16	7.69	3.00	13	8.08	3.04	18	6.61	2.43
WW-II – pos. personality trait subscale	-	-	-	-	-	-	-	-	-	17	18.47	6.92	13	21.00	6.04	16	8.31	1.82	14	18.71	6.70	18	8.06	1.66

Note. Dash indicates that data were not obtained for that cell. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; BAI = Beck Anxiety Inventory; PSWQ = Penn State Worry Questionnaire; PSS = Perceived Stress Scale; BDI = Beck Depression Inventory; CSAI = Cognitive and Somatic Anxiety Questionnaire; RRA = Reaction to Relaxation and Arousal Questionnaire; WW-II = Why Worry Scale.

Table A2

Numbers, Means, and Standard Deviations of Anxiety During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
sp	29	2.24	2.59	20	2.95	2.04	21	0.19	0.51	26	2.85	2.17	17	2.65	2.29	20	0.10	0.31	21	2.81	1.99	16	2.13	2.00	18	0.22	0.55
b	24	1.58	1.93	16	3.50	2.71	19	0.26	0.93	23	1.74	1.63	16	3.25	2.91	18	0.00	0.00	19	2.79	2.12	15	2.40	2.61	16	0.06	0.25
d	29	2.17	2.39	20	3.25	2.38	21	0.24	0.77	26	2.31	2.20	17	3.41	2.69	20	0.15	0.49	21	3.52	2.18	16	2.63	2.31	18	0.00	0.00
e	24	1.96	2.29	16	2.38	2.13	19	0.00	0.00	23	1.87	1.52	16	2.63	2.47	18	0.17	0.71	19	3.26	1.73	15	2.20	2.24	16	0.00	0.00
R																											
sp	29	2.03	2.29	20	3.60	2.54	21	0.38	0.92	26	3.19	2.58	17	2.71	1.90	20	0.15	0.37	21	3.00	2.21	15	2.20	1.93	18	0.11	0.32
b	24	1.33	1.74	16	3.31	2.85	19	0.26	0.81	23	2.09	2.21	16	2.88	2.53	18	0.33	0.77	19	2.47	1.90	15	2.13	2.17	16	0.19	0.40
d	29	1.90	1.95	20	3.30	2.13	21	0.14	0.48	26	2.65	2.30	17	2.71	2.37	20	0.15	0.49	21	2.67	2.22	16	2.19	1.76	18	0.11	0.32
e	24	1.33	1.69	16	3.06	1.98	19	0.00	0.00	23	2.83	2.50	16	2.75	2.59	18	0.11	0.32	19	2.11	1.56	15	1.80	1.52	16	0.13	0.34

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS	19	2.05	1.75	16	2.13	1.54	18	0.06	0.24	17	1.65	1.77	15	2.20	1.57	18	0.39	1.20	15	3.07	2.66	19	0.16	0.50
sp	18	1.50	1.82	16	2.00	1.79	17	0.00	0.00	17	1.82	1.63	15	2.40	2.26	17	0.06	0.24	15	2.93	2.49	19	0.05	0.23
b	19	1.79	1.51	16	2.50	1.79	18	0.00	0.00	17	1.71	1.05	15	2.60	2.06	18	0.00	0.00	15	2.67	2.02	19	0.05	0.23
d	18	1.89	1.84	16	2.56	2.03	17	0.00	0.00	17	1.59	1.37	15	2.60	2.16	17	0.00	0.00	15	2.27	1.87	19	0.16	0.50
e																								
R	19	2.68	2.29	16	2.31	1.54	18	0.06	0.24	17	1.65	1.62	15	2.07	1.79	18	0.11	0.32	15	2.13	1.85	19	0.11	0.32
sp	18	2.17	1.58	16	2.06	2.08	17	0.00	0.00	17	1.94	1.82	15	1.80	1.66	17	0.06	0.24	15	2.60	2.16	19	0.11	0.32
b	19	1.79	1.84	16	2.13	1.86	18	0.00	0.00	17	1.94	1.75	15	1.93	1.79	18	0.22	0.55	15	2.27	1.75	19	0.16	0.50
d	18	1.39	2.00	16	2.19	2.23	17	0.00	0.00	17	1.35	1.32	15	1.87	2.10	17	0.24	0.56	15	1.93	2.19	19	0.16	0.50
e	19	2.05	1.75	16	2.13	1.54	18	0.06	0.24	17	1.65	1.77	15	2.20	1.57	18	0.39	1.20	15	3.07	2.66	19	0.16	0.50

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; sp = speech; b = at the beginning; d = during; e = at the end.

Table A3

Numbers, Means, and Standard Deviations of Worry During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
sp	29	1.76	2.21	20	2.45	2.26	21	0.00	0.00	26	2.04	2.14	17	2.82	2.30	20	0.00	0.00	21	2.38	1.63	16	2.38	2.39	18	0.00	0.00
b	23	1.48	2.02	16	2.44	2.10	19	0.00	0.00	23	2.17	2.12	16	2.56	2.83	17	0.00	0.00	19	1.95	1.81	15	2.40	2.97	16	0.06	0.25
d	29	1.76	2.06	20	3.15	2.54	21	0.00	0.00	26	2.35	2.21	17	2.71	2.57	19	0.00	0.00	21	2.14	2.15	16	2.75	2.98	18	0.06	0.24
e	24	1.92	2.12	16	2.19	2.10	19	0.00	0.00	23	2.78	2.61	16	2.88	2.73	17	0.00	0.00	19	2.11	2.16	15	2.47	2.83	16	0.06	0.25
R																											
sp	29	2.14	2.18	20	2.90	2.55	21	0.00	0.00	26	2.54	2.58	17	3.65	2.80	20	0.00	0.00	21	2.48	2.52	16	2.38	2.58	18	0.06	0.24
b	24	1.58	1.84	16	2.88	2.58	19	0.00	0.00	23	2.52	2.19	16	2.94	2.41	18	0.11	0.47	19	2.16	2.09	15	2.47	2.97	16	0.06	0.25
d	29	1.41	1.74	20	3.25	2.24	21	0.00	0.00	26	2.38	2.04	17	3.06	2.84	20	0.00	0.00	21	1.62	1.86	16	2.63	2.70	18	0.06	0.24
e	24	1.50	1.91	16	2.81	2.17	19	0.00	0.00	23	2.70	2.36	16	2.81	2.66	17	0.06	0.24	19	1.68	1.95	15	2.33	2.64	16	0.06	0.25

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
sp	19	2.53	2.41	16	2.25	1.84	18	0.00	0.00	17	1.12	1.32	15	2.60	2.56	18	0.28	1.18	15	1.93	2.22	19	0.05	0.23
b	18	1.61	1.88	16	2.19	2.17	17	0.00	0.00	17	1.24	1.79	15	2.53	2.67	17	0.00	0.00	15	2.00	2.48	18	0.00	0.00
d	19	2.26	2.49	16	2.69	2.21	18	0.00	0.00	17	1.29	1.83	15	2.73	2.71	18	0.00	0.00	15	2.27	2.69	18	0.06	0.24
e	18	2.06	2.53	16	2.81	2.61	17	0.00	0.00	17	1.35	1.90	15	2.80	2.96	17	0.00	0.00	15	2.33	2.77	18	0.00	0.00
R																								
sp	19	2.32	1.92	16	2.69	2.27	18	0.00	0.00	17	1.53	2.15	15	2.73	2.87	18	0.00	0.00	15	1.93	2.22	19	0.00	0.00
b	18	1.94	1.70	16	2.31	2.30	17	0.00	0.00	17	1.41	1.66	15	2.40	2.35	17	0.00	0.00	15	2.13	2.77	19	0.00	0.00
d	19	1.95	1.84	16	2.31	2.06	18	0.00	0.00	17	1.88	2.26	15	2.20	2.18	18	0.00	0.00	15	2.33	2.44	19	0.00	0.00
e	18	1.56	1.98	16	2.25	2.21	17	0.00	0.00	17	1.18	1.47	15	2.13	2.10	17	0.00	0.00	15	2.13	2.80	19	0.00	0.00

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; sp = speech; b = at the beginning; d = during; e = at the end.

Table A4

Numbers, Means, and Standard Deviations of Relaxation During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
sp	29	3.17	2.62	20	3.15	2.70	21	5.00	3.36	26	3.38	2.61	17	3.65	2.26	20	5.60	3.42	21	3.43	2.46	16	4.31	2.09	18	5.44	3.45
b	24	3.71	2.31	16	4.75	2.70	19	5.42	3.55	23	3.74	2.26	16	4.19	2.37	18	5.39	3.05	19	4.32	2.29	15	3.73	2.15	16	5.38	3.18
d	29	3.48	2.35	20	3.85	2.03	21	5.71	3.48	26	3.81	2.45	17	4.59	2.35	20	5.85	2.96	21	4.43	2.36	16	4.13	1.93	18	5.17	3.31
e	24	3.63	2.36	16	4.69	2.75	19	6.16	3.44	23	4.04	2.29	16	4.94	2.67	18	5.94	3.11	19	4.58	2.17	15	4.07	2.02	16	5.69	3.14
R																											
sp	29	3.52	2.53	20	3.35	2.46	21	5.24	3.35	26	3.58	2.61	17	3.29	2.26	20	5.90	3.32	21	3.24	2.26	16	3.38	2.19	18	5.83	3.20
b	24	3.04	2.46	16	4.31	2.44	19	5.89	3.46	23	3.87	2.40	16	4.50	2.63	18	5.61	2.99	19	4.42	2.24	15	3.67	2.26	16	5.38	3.28
d	29	3.48	2.29	20	3.90	2.07	21	6.14	3.31	26	3.62	2.53	17	4.71	2.37	20	6.30	2.77	21	4.81	2.04	16	4.13	2.31	18	6.06	3.23
e	24	3.75	2.56	16	3.94	2.46	19	6.68	2.91	23	3.65	2.77	16	4.50	2.56	18	6.33	2.66	19	5.16	2.39	15	4.73	2.89	16	6.25	3.02

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
sp	19	4.32	2.38	16	4.19	2.20	18	6.00	3.07	17	4.82	2.90	15	2.40	1.68	18	5.78	3.52	15	3.87	2.97	19	5.21	3.46
b	18	4.39	2.12	16	3.63	1.54	17	5.29	3.46	17	4.94	2.41	15	2.87	1.81	17	5.59	3.48	15	3.80	2.86	19	5.26	3.43
d	19	4.16	2.63	16	3.88	1.67	18	5.72	3.12	17	5.18	1.94	15	3.07	1.94	18	5.67	3.27	15	4.13	3.02	19	5.32	3.45
e	18	4.33	2.70	16	4.44	2.22	17	6.06	3.17	17	5.35	2.74	15	3.07	2.05	17	6.06	3.21	15	4.60	3.00	19	5.74	3.62
R																								
sp	19	4.00	2.54	16	3.81	1.72	18	5.94	3.21	16	4.75	2.82	15	3.00	1.93	18	5.67	3.51	15	3.87	3.14	19	5.37	3.22
b	18	4.00	2.38	16	3.88	2.19	17	5.82	3.24	17	4.59	2.53	15	3.33	2.64	17	5.29	3.48	15	3.33	2.82	19	4.95	3.46
d	19	4.63	2.45	16	4.75	1.95	18	6.39	3.09	17	5.71	2.39	15	4.20	2.60	18	5.72	3.14	15	4.20	2.88	19	5.37	3.20
e	18	4.78	3.04	16	5.19	1.94	17	6.65	3.37	17	5.94	2.38	15	4.27	2.49	17	6.29	3.14	15	4.33	3.06	19	6.05	2.99

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; sp = speech; b = at the beginning; d = during; e = at the end.

Table A5

Numbers, Means, and Standard Deviations of Boredom During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
sp	29	1.10	1.54	20	1.15	2.13	21	0.90	2.30	26	1.38	1.86	17	1.71	1.57	20	0.70	1.26	21	2.10	2.61	16	2.00	1.71	17	0.94	1.78
b	24	1.25	1.65	16	1.88	2.87	19	1.00	2.40	23	1.96	2.40	16	2.94	2.77	18	1.00	1.97	19	2.26	2.51	15	2.87	2.61	16	0.56	1.41
d	29	2.03	1.86	20	2.70	3.44	21	1.48	2.64	26	2.42	2.63	17	3.18	2.70	20	1.20	2.14	21	2.71	2.61	16	3.31	2.75	18	1.00	1.97
e	24	1.54	1.69	16	2.81	3.75	19	1.11	2.51	23	2.61	2.73	16	3.19	2.86	18	1.50	2.53	19	2.58	2.36	15	3.33	2.72	16	1.19	2.14
R																											
sp	29	1.28	1.79	20	1.15	1.84	21	1.33	2.54	26	2.23	1.82	17	2.06	2.33	20	1.30	2.36	21	1.62	1.75	16	2.13	1.78	18	0.72	1.02
b	24	1.25	1.70	16	1.94	2.89	19	1.42	2.69	23	1.78	2.28	16	1.63	2.09	18	1.00	2.38	19	1.84	2.54	15	2.60	2.20	16	0.69	1.78
d	29	1.69	1.71	20	2.35	3.20	21	1.29	2.51	26	1.88	2.27	17	1.82	2.24	20	1.05	2.35	21	2.62	2.96	16	3.00	2.63	18	0.72	1.67
e	24	1.63	1.81	15	2.33	3.13	19	1.32	2.69	23	1.87	2.20	16	1.63	2.03	18	1.33	2.61	19	2.53	2.70	15	3.07	2.89	16	1.00	2.07

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
sp	19	1.63	1.80	16	1.69	1.66	18	1.00	1.94	17	1.41	1.80	15	1.80	2.11	18	0.78	1.26	15	2.07	2.37	19	0.79	1.40
b	18	1.50	2.12	16	2.69	2.41	17	1.18	2.04	17	2.06	2.36	15	2.80	2.68	17	0.47	0.80	15	2.13	2.59	19	0.63	0.96
d	19	2.21	2.23	16	3.25	2.52	18	1.67	2.25	17	2.71	2.78	15	3.07	2.71	18	0.72	1.02	15	2.47	2.61	19	0.95	1.54
e	18	2.33	2.25	16	3.75	2.79	17	1.71	2.34	17	3.24	2.99	15	3.47	3.07	17	1.24	2.25	15	2.60	2.87	19	1.47	2.61
R																								
sp	19	1.74	2.00	16	2.00	1.86	18	1.22	1.48	17	1.41	2.09	15	2.33	2.29	18	0.72	1.18	15	1.60	2.06	19	0.68	1.00
b	18	1.50	2.09	16	3.44	3.12	17	1.35	1.80	17	1.71	2.11	15	2.27	2.25	17	0.47	0.80	15	1.27	2.22	19	0.53	0.77
d	19	1.53	1.98	16	3.69	3.52	18	1.39	1.97	17	2.00	2.29	15	2.73	2.40	18	0.61	0.92	15	1.47	2.23	19	0.74	1.15
e	18	1.28	1.87	16	3.88	3.91	17	1.65	2.42	17	1.94	2.30	15	3.27	2.87	17	0.71	1.49	15	1.47	1.96	19	0.89	1.70

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; sp = speech; b = at the beginning; d = during; e = at the end.

Table A6

Numbers, Means, and Standard Deviations of Distress During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
sp	29	1.55	2.15	20	1.65	1.66	21	0.05	0.22	26	1.58	1.92	16	1.88	1.63	20	0.20	0.89	21	1.52	1.44	16	1.63	2.03	18	0.56	1.34
b	24	1.21	1.91	16	2.38	2.36	19	0.37	1.61	23	1.26	1.66	16	2.00	2.22	18	0.11	0.47	19	1.63	1.64	15	1.87	2.39	16	0.38	1.09
d	29	1.31	1.81	20	2.35	2.06	21	0.33	1.53	26	1.77	1.92	17	2.18	1.94	20	0.15	0.49	21	1.43	1.40	16	2.44	2.37	18	0.50	1.47
e	24	1.17	1.93	16	2.06	1.88	19	0.37	1.61	23	2.00	2.02	16	1.69	1.82	18	0.11	0.47	19	1.63	1.71	15	2.07	1.98	16	0.69	1.89
R																											
sp	29	1.17	1.71	20	2.20	1.91	21	0.19	0.68	26	1.62	1.92	17	2.18	1.78	20	0.05	0.22	21	1.76	2.02	15	1.53	1.64	18	0.56	1.54
b	24	1.04	1.60	16	2.38	2.73	19	0.11	0.46	23	1.48	1.97	16	2.63	2.55	18	0.00	0.00	19	1.58	1.84	15	1.40	1.92	16	0.19	0.40
d	29	1.14	1.64	20	2.40	2.35	21	0.10	0.44	26	1.92	1.92	17	2.47	2.40	20	0.00	0.00	21	1.43	1.63	16	1.63	1.86	18	0.44	1.25
e	24	1.21	1.91	16	1.63	1.54	19	0.11	0.46	23	2.13	2.14	16	2.13	2.22	18	0.00	0.00	19	1.63	1.86	15	1.20	1.61	16	0.50	1.32

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
sp	19	1.42	1.50	16	1.56	1.71	18	0.17	0.71	17	1.12	1.27	15	1.40	1.76	18	0.28	0.83	15	1.67	2.06	19	0.21	0.71
b	18	1.33	1.94	16	1.75	1.88	17	0.12	0.49	17	1.12	1.45	15	1.87	1.96	17	0.12	0.49	15	1.47	1.77	19	0.26	0.93
d	19	1.37	1.71	16	1.94	1.98	18	0.11	0.47	17	0.94	1.14	15	2.07	1.71	18	0.17	0.71	15	1.33	1.88	19	0.26	0.93
e	18	1.39	1.94	16	1.94	2.24	17	0.12	0.49	17	0.82	1.19	15	2.20	1.82	17	0.18	0.73	15	1.33	2.09	19	0.37	1.38
R																								
sp	19	1.58	2.12	16	1.88	1.86	18	0.11	0.47	17	1.00	1.12	15	2.13	2.61	18	0.22	0.94	15	1.47	2.07	19	0.21	0.92
b	18	1.06	1.39	16	1.81	2.29	17	0.24	0.97	17	1.47	1.74	15	2.07	2.28	17	0.18	0.73	15	1.73	2.55	19	0.16	0.50
d	19	1.11	1.41	16	1.31	1.70	18	0.22	0.94	17	1.71	1.79	15	1.93	2.34	18	0.17	0.71	15	1.60	2.16	19	0.21	0.71
e	18	0.83	1.29	16	1.25	1.61	17	0.24	0.97	17	1.18	1.33	15	1.93	2.46	17	0.24	0.97	15	1.40	2.38	19	0.32	0.95

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; sp = speech; b = at the beginning; d = during; e = at the end.

Table A7

Numbers, Means, and Standard Deviations of Pleasantness During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
sp	29	2.79	2.26	20	3.30	2.49	21	4.38	3.77	26	2.85	2.36	17	3.29	2.59	20	4.85	3.51	21	3.38	2.60	16	4.06	2.54	18	5.00	3.58
b	24	3.04	2.63	16	3.31	2.77	18	4.33	3.58	23	3.04	2.29	16	3.50	2.16	18	4.72	3.34	19	3.95	2.61	15	2.93	1.87	16	5.06	3.23
d	29	2.97	2.73	20	2.80	2.19	20	4.50	3.61	26	2.73	2.27	17	3.65	2.47	20	5.05	3.41	21	3.76	2.96	16	3.19	1.80	18	5.44	3.22
e	24	3.13	2.71	16	3.19	2.71	19	4.37	3.45	23	3.13	2.30	16	3.56	2.68	18	4.78	3.44	19	4.21	2.92	15	3.13	1.68	16	5.19	3.19
R																											
sp	29	3.17	2.67	20	3.55	2.28	21	4.57	3.52	26	2.77	2.69	17	3.00	2.03	20	4.55	3.28	21	3.24	2.55	16	3.13	2.06	18	5.28	3.43
b	24	2.96	2.37	16	2.88	2.31	19	4.84	3.42	23	3.35	2.37	16	3.69	2.12	18	4.61	3.47	19	3.63	2.34	15	3.47	2.03	16	5.13	3.30
d	29	2.79	2.46	20	3.10	2.13	21	5.24	3.40	26	3.04	2.46	17	4.00	2.32	20	5.35	3.51	21	3.81	2.64	16	3.44	1.90	18	5.61	3.24
e	24	2.92	2.72	16	3.31	2.44	19	5.11	3.51	23	3.30	2.53	16	3.75	2.41	18	5.06	3.49	19	4.21	2.72	15	3.93	2.34	16	5.50	3.22

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
sp	19	3.58	2.63	16	3.31	1.92	18	5.50	3.35	17	4.35	2.78	15	2.93	1.67	18	5.22	3.75	15	4.00	2.95	19	5.11	3.48
b	18	3.72	2.19	16	4.13	2.03	17	5.06	3.58	17	4.18	2.83	15	2.60	1.72	17	5.00	3.87	15	4.07	2.87	19	5.00	3.40
d	19	3.68	2.40	16	4.06	2.17	18	5.22	3.46	17	4.29	2.85	15	2.80	1.93	18	5.11	3.71	15	4.20	2.91	19	4.95	3.49
e	18	4.00	2.54	16	3.88	2.58	17	5.29	3.55	17	4.24	2.91	15	2.93	1.87	17	5.29	3.80	15	4.33	2.87	19	5.11	3.51
R																								
sp	19	3.58	2.39	16	3.63	1.93	18	4.56	3.47	17	4.29	2.73	15	2.47	1.46	18	5.50	3.33	15	3.60	2.87	19	4.53	3.58
b	18	3.56	2.28	16	3.94	2.38	17	5.41	3.47	17	4.12	3.00	15	2.67	1.84	17	5.24	3.44	14	3.86	2.98	19	4.74	3.54
d	19	3.74	2.70	16	4.31	2.21	18	5.67	3.48	17	4.65	2.83	15	3.13	2.23	18	5.44	3.36	15	4.53	3.20	19	5.11	3.26
e	18	4.11	2.83	16	4.44	2.66	17	5.76	3.65	17	5.06	2.66	15	3.13	2.23	17	5.65	3.48	15	6.40	7.77	19	5.26	3.19

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; sp = speech; b = at the beginning; d = during; e = at the end.

Table A8

Numbers, Means, and Standard Deviations of Sadness During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
sp	29	1.28	1.69	20	0.85	1.50	21	0.00	0.00	25	1.72	1.95	17	1.53	1.70	20	0.00	0.00	21	1.33	1.49	16	1.56	2.39	18	0.00	0.00
b	24	1.33	1.95	16	1.25	1.88	19	0.00	0.00	23	1.83	2.25	16	1.81	1.91	18	0.11	0.47	19	1.68	1.70	15	2.07	2.58	16	0.00	0.00
d	29	1.62	2.01	20	0.85	1.42	21	0.00	0.00	26	2.35	2.68	17	1.71	1.61	20	0.10	0.45	21	1.71	1.87	16	2.31	2.55	18	0.00	0.00
e	24	1.63	2.04	16	0.94	1.44	19	0.00	0.00	23	2.65	2.62	16	1.94	2.11	18	0.11	0.47	19	2.00	2.29	15	2.27	2.74	16	0.00	0.00
R																											
sp	29	0.86	1.57	20	0.80	1.24	21	0.00	0.00	26	1.46	2.08	17	1.65	1.90	20	0.05	0.22	21	1.62	1.94	16	1.38	1.96	18	0.00	0.00
b	24	0.96	1.83	16	1.06	1.57	19	0.00	0.00	23	1.83	2.29	16	1.56	1.67	18	0.17	0.51	19	2.00	2.16	15	2.27	2.84	16	0.06	0.25
d	29	1.10	1.78	20	0.75	1.12	21	0.00	0.00	26	2.04	2.39	17	1.59	1.73	20	0.15	0.49	21	1.67	1.98	16	2.13	2.68	18	0.06	0.24
e	24	0.88	1.73	16	0.88	1.20	19	0.00	0.00	23	2.48	2.73	16	2.00	1.93	17	0.12	0.49	19	1.79	1.99	15	1.93	2.69	16	0.06	0.25

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
sp	19	1.58	1.92	16	1.69	2.06	18	0.00	0.00	17	1.06	1.25	15	1.00	1.41	18	0.00	0.00	15	1.33	1.95	19	0.21	0.71
b	18	1.28	1.81	16	1.50	1.90	17	0.00	0.00	17	1.24	1.71	15	1.27	1.67	17	0.00	0.00	15	1.33	2.19	19	0.05	0.23
d	19	1.37	1.86	16	1.56	1.82	18	0.17	0.71	17	1.18	1.59	15	1.40	1.84	18	0.06	0.24	15	1.67	2.38	19	0.05	0.23
e	18	1.44	1.92	16	1.44	1.67	17	0.00	0.00	17	1.29	1.79	15	1.27	1.83	17	0.00	0.00	15	1.60	2.29	19	0.05	0.23
R																								
sp	19	1.89	1.91	16	1.81	2.17	18	0.00	0.00	17	1.12	1.54	15	1.20	1.57	18	0.00	0.00	15	0.93	1.33	19	0.37	1.61
b	18	1.56	1.65	16	1.56	1.86	17	0.00	0.00	17	1.24	1.60	15	1.53	2.10	17	0.00	0.00	15	1.53	2.39	19	0.21	0.71
d	19	1.63	1.74	16	1.25	1.48	18	0.00	0.00	17	1.59	1.84	15	1.40	1.92	18	0.00	0.00	15	1.53	2.53	19	0.05	0.23
e	18	1.44	1.69	16	1.13	1.31	17	0.00	0.00	17	1.35	1.84	15	1.33	1.95	17	0.00	0.00	15	1.60	2.50	19	0.05	0.23

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; sp = speech; b = at the beginning; d = during; e = at the end.

Table A9

Numbers, Means, and Standard Deviations of Sleepiness During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
sp	29	1.62	2.58	20	2.25	2.99	21	0.43	1.12	26	2.46	2.67	17	2.24	2.70	20	0.95	1.93	21	2.52	2.42	16	3.63	3.28	18	1.28	2.78
b	24	2.04	2.61	16	3.38	3.14	19	0.74	2.31	23	2.43	2.50	16	3.69	2.68	18	1.50	2.57	19	2.53	2.27	15	4.60	3.00	16	1.44	2.76
d	29	2.62	2.58	20	3.90	2.94	21	0.71	2.19	26	3.23	2.60	17	4.24	2.77	20	1.45	2.78	21	3.24	2.98	16	5.00	2.66	18	1.50	2.94
e	24	3.04	2.93	16	5.06	3.47	19	1.37	2.61	23	3.65	2.69	16	5.06	3.07	18	1.78	2.88	19	3.32	2.91	15	5.73	2.91	16	1.81	3.21
R																											
sp	29	1.59	2.44	20	1.80	2.84	21	1.00	2.10	26	1.77	2.25	17	2.29	3.00	20	1.00	2.03	21	2.48	2.36	16	3.25	2.77	18	0.39	0.70
b	24	1.75	2.59	15	3.67	3.54	19	1.21	2.42	23	2.48	2.84	16	3.50	2.80	18	2.00	3.16	19	2.53	2.41	15	4.40	3.09	16	0.81	1.83
d	29	2.34	2.48	20	4.65	3.45	21	2.43	3.54	26	3.04	2.65	17	4.88	2.76	20	1.50	2.56	21	3.67	2.83	16	5.50	2.94	18	1.00	2.03
e	24	2.79	2.92	16	5.06	3.57	19	2.58	3.76	23	3.35	2.87	16	5.13	2.96	18	1.67	2.91	19	3.26	2.75	15	6.07	3.08	16	1.25	2.18

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
sp	19	2.32	2.43	16	3.50	3.16	18	1.11	1.53	17	1.53	2.24	15	2.93	2.40	18	0.94	0.94	15	2.47	2.47	19	0.95	1.61
b	18	2.56	2.43	16	4.63	3.14	17	1.47	1.77	17	2.18	2.43	15	3.87	2.75	17	0.71	0.92	15	2.40	2.80	19	0.95	1.39
d	19	2.95	2.90	16	5.38	2.78	18	2.17	2.87	17	2.94	2.79	15	4.67	2.47	18	1.11	1.13	15	3.27	2.60	19	1.68	2.14
e	18	2.89	3.23	16	6.13	2.83	17	2.35	3.44	17	3.12	3.10	15	5.13	2.88	17	1.76	1.95	15	3.40	2.80	19	1.89	2.73
R																								
sp	19	2.42	2.14	16	4.00	3.18	18	2.06	2.73	17	1.53	2.21	15	3.47	2.80	18	0.72	1.07	15	2.47	2.80	19	0.84	1.38
b	18	2.78	2.05	16	4.44	3.27	17	3.24	3.05	17	2.29	2.52	15	3.80	3.19	17	1.00	1.37	15	2.13	2.95	19	0.79	0.98
d	19	3.74	2.42	16	5.31	3.05	18	3.83	3.43	17	3.29	3.00	15	4.87	2.80	18	1.33	1.85	15	3.33	2.87	19	1.26	1.41
e	18	3.94	2.71	16	5.75	2.82	17	4.35	4.03	17	3.18	2.70	15	5.53	2.85	17	1.82	2.83	15	3.87	3.44	19	2.00	2.67

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; sp = speech; b = at the beginning; d = during; e = at the end.

Table A10

Numbers, Means, and Standard Deviations of the Accelerometer During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
bsp min1	29	0.0032	0.0028	20	0.0044	0.0047	21	0.0039	0.0036	26	0.0035	0.0048	17	0.0054	0.0063	20	0.0037	0.0046	21	0.0028	0.0025	16	0.0031	0.0019	18	0.0037	0.0043
sp min1	29	0.0031	0.0029	20	0.0038	0.0039	21	0.0033	0.0035	26	0.0031	0.0038	17	0.0033	0.0032	20	0.0032	0.0035	21	0.0024	0.0019	16	0.0030	0.0021	18	0.0026	0.0017
sp min2	29	0.0033	0.0036	20	0.0041	0.0042	21	0.0034	0.0033	26	0.0029	0.0031	14	0.0033	0.0027	20	0.0031	0.0032	20	0.0024	0.0019	16	0.0030	0.0022	18	0.0029	0.0024
min1	29	0.0022	0.0014	20	0.0019	0.0006	21	0.0020	0.0015	26	0.0019	0.0013	17	0.0021	0.0018	20	0.0022	0.0018	21	0.0017	0.0003	16	0.0026	0.0027	18	0.0019	0.0010
min2	29	0.0024	0.0019	20	0.0018	0.0005	21	0.0020	0.0015	26	0.0018	0.0013	17	0.0017	0.0004	20	0.0024	0.0027	21	0.0016	0.0003	16	0.0027	0.0030	18	0.0021	0.0021
min3	29	0.0022	0.0014	20	0.0019	0.0006	21	0.0018	0.0010	26	0.0021	0.0021	17	0.0017	0.0003	20	0.0025	0.0030	21	0.0018	0.0007	16	0.0029	0.0032	18	0.0021	0.0020
min4	29	0.0023	0.0021	20	0.0018	0.0004	21	0.0018	0.0012	26	0.0022	0.0023	17	0.0019	0.0008	20	0.0022	0.0019	21	0.0017	0.0004	16	0.0025	0.0021	18	0.0021	0.0024
min5	29	0.0023	0.0018	20	0.0019	0.0005	21	0.0018	0.0011	26	0.0020	0.0015	17	0.0018	0.0004	20	0.0022	0.0021	21	0.0018	0.0005	16	0.0024	0.0020	18	0.0020	0.0017
R																											
bsp min1	29	0.0031	0.0031	20	0.0047	0.0056	21	0.0036	0.0037	26	0.0031	0.0031	17	0.0046	0.0054	20	0.0035	0.0032	21	0.0029	0.0032	16	0.0029	0.0024	18	0.0033	0.0027
sp min1	29	0.0031	0.0036	20	0.0046	0.0048	21	0.0031	0.0031	26	0.0032	0.0041	17	0.0033	0.0030	20	0.0028	0.0031	21	0.0025	0.0020	16	0.0024	0.0016	18	0.0029	0.0021
sp min2	28	0.0032	0.0034	20	0.0045	0.0046	18	0.0030	0.0026	26	0.0030	0.0034	16	0.0035	0.0036	19	0.0029	0.0027	21	0.0026	0.0024	15	0.0027	0.0024	16	0.0025	0.0018
min1	29	0.0018	0.0008	20	0.0024	0.0021	21	0.0017	0.0008	25	0.0020	0.0007	17	0.0022	0.0020	20	0.0020	0.0013	21	0.0019	0.0014	16	0.0021	0.0016	18	0.0019	0.0014
min2	29	0.0018	0.0006	20	0.0024	0.0019	21	0.0018	0.0015	25	0.0017	0.0004	17	0.0021	0.0020	20	0.0018	0.0009	21	0.0018	0.0011	16	0.0020	0.0012	18	0.0021	0.0016
min3	29	0.0019	0.0009	20	0.0022	0.0015	21	0.0019	0.0018	25	0.0019	0.0008	17	0.0021	0.0019	20	0.0018	0.0009	21	0.0019	0.0013	16	0.0019	0.0011	18	0.0021	0.0017
min4	29	0.0018	0.0008	20	0.0022	0.0018	21	0.0019	0.0017	25	0.0019	0.0010	17	0.0022	0.0019	20	0.0019	0.0013	21	0.0018	0.0009	16	0.0019	0.0011	18	0.0021	0.0020
min5	28	0.0018	0.0010	20	0.0023	0.0022	21	0.0019	0.0017	24	0.0020	0.0013	17	0.0022	0.0019	20	0.0020	0.0013	21	0.0017	0.0005	16	0.0020	0.0013	18	0.0021	0.0016

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
bsp min1	19	0.0022	0.0011	16	0.0037	0.0031	18	0.0047	0.0063	17	0.0021	0.0009	15	0.0019	0.0003	18	0.0037	0.0039	14	0.0025	0.0008	18	0.0023	0.0012			
sp min1	19	0.0019	0.0007	16	0.0033	0.0027	18	0.0033	0.0028	17	0.0020	0.0006	15	0.0021	0.0009	18	0.0028	0.0020	14	0.0027	0.0017	18	0.0019	0.0006			
sp min2	19	0.0019	0.0007	15	0.0036	0.0032	18	0.0033	0.0025	17	0.0019	0.0006	15	0.0020	0.0007	18	0.0031	0.0032	14	0.0025	0.0012	18	0.0019	0.0005			
min1	19	0.0017	0.0007	16	0.0025	0.0020	18	0.0027	0.0023	17	0.0017	0.0005	15	0.0017	0.0005	18	0.0022	0.0016	14	0.0022	0.0008	18	0.0017	0.0006			
min2	19	0.0016	0.0004	15	0.0023	0.0018	17	0.0026	0.0018	17	0.0017	0.0005	15	0.0017	0.0006	18	0.0020	0.0014	14	0.0022	0.0010	18	0.0016	0.0003			
min3	19	0.0016	0.0004	15	0.0024	0.0018	17	0.0026	0.0017	17	0.0018	0.0008	15	0.0016	0.0004	18	0.0021	0.0015	14	0.0024	0.0014	18	0.0016	0.0002			
min4	19	0.0016	0.0004	15	0.0024	0.0017	17	0.0029	0.0023	17	0.0017	0.0005	15	0.0016	0.0002	18	0.0021	0.0015	14	0.0024	0.0015	18	0.0016	0.0003			
min5	19	0.0016	0.0004	15	0.0026	0.0019	17	0.0027	0.0019	17	0.0017	0.0005	15	0.0017	0.0006	18	0.0021	0.0015	14	0.0020	0.0007	18	0.0022	0.0027			
R																											
bsp min1	19	0.0021	0.0008	16	0.0030	0.0019	18	0.0044	0.0045	17	0.0021	0.0007	15	0.0018	0.0003	18	0.0042	0.0046	14	0.0026	0.0018	18	0.0028	0.0028			
sp min1	19	0.0019	0.0006	16	0.0034	0.0025	18	0.0034	0.0025	17	0.0021	0.0008	15	0.0018	0.0006	18	0.0035	0.0028	14	0.0022	0.0009	18	0.0025	0.0024			
sp min2	19	0.0019	0.0007	16	0.0035	0.0028	18	0.0035	0.0033	17	0.0020	0.0007	15	0.0018	0.0004	18	0.0033	0.0025	14	0.0022	0.0007	17	0.0022	0.0017			
min1	19	0.0019	0.0008	16	0.0026	0.0020	18	0.0027	0.0022	17	0.0019	0.0008	15	0.0015	0.0001	18	0.0028	0.0021	14	0.0019	0.0005	18	0.0020	0.0014			
min2	19	0.0017	0.0007	16	0.0028	0.0023	18	0.0027	0.0023	17	0.0018	0.0005	15	0.0015	0.0001	18	0.0028	0.0024	14	0.0020	0.0007	18	0.0018	0.0011			
min3	19	0.0017	0.0007	16	0.0025	0.0020	18	0.0027	0.0023	17	0.0018	0.0006	15	0.0015	0.0001	18	0.0029	0.0024	14	0.0021	0.0010	18	0.0019	0.0011			
min4	19	0.0017	0.0008	16	0.0025	0.0018	18	0.0025	0.0020	17	0.0017	0.0005	15	0.0016	0.0002	18	0.0029	0.0023	14	0.0021	0.0009	18	0.0020	0.0012			
min5	19	0.0019	0.0011	16	0.0023	0.0015	18	0.0027	0.0021	17	0.0018	0.0005	15	0.0016	0.0003	18	0.0025	0.0020	14	0.0020	0.0007	18	0.0021	0.0016			

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; bsp = before speech; sp = speech.

Table A11

Numbers, Means, and Standard Deviations of the Spectral Coherence During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	27	0.67	0.30	17	0.73	0.24	16	0.65	0.26	23	0.69	0.21	15	0.71	0.22	19	0.69	0.26	17	0.61	0.28	14	0.66	0.28	15	0.56	0.31
min2	28	0.68	0.28	17	0.70	0.23	17	0.59	0.31	23	0.76	0.27	15	0.68	0.27	19	0.72	0.28	17	0.68	0.31	14	0.73	0.24	15	0.62	0.33
min3	28	0.79	0.19	17	0.72	0.27	17	0.75	0.26	23	0.71	0.23	15	0.69	0.30	19	0.72	0.29	17	0.68	0.35	14	0.75	0.25	15	0.69	0.33
min4	28	0.78	0.21	17	0.70	0.24	17	0.72	0.29	23	0.76	0.26	15	0.75	0.16	19	0.72	0.28	17	0.67	0.28	14	0.71	0.25	15	0.67	0.33
min5	27	0.66	0.28	16	0.78	0.16	15	0.70	0.24	21	0.73	0.25	14	0.78	0.18	15	0.78	0.21	16	0.79	0.22	14	0.70	0.20	13	0.69	0.30
R																											
min1	27	0.67	0.28	17	0.74	0.21	18	0.61	0.22	23	0.67	0.21	16	0.68	0.25	19	0.67	0.20	17	0.70	0.26	13	0.64	0.29	15	0.65	0.28
min2	27	0.73	0.24	17	0.72	0.24	18	0.65	0.33	23	0.71	0.22	16	0.77	0.19	19	0.70	0.28	17	0.70	0.24	13	0.68	0.26	15	0.77	0.21
min3	27	0.69	0.22	17	0.80	0.19	18	0.73	0.24	23	0.68	0.26	16	0.77	0.22	19	0.72	0.24	17	0.75	0.24	13	0.67	0.20	15	0.68	0.25
min4	26	0.65	0.30	17	0.75	0.18	18	0.72	0.30	22	0.77	0.20	16	0.73	0.19	19	0.72	0.24	17	0.71	0.29	13	0.58	0.30	15	0.78	0.15
min5	25	0.74	0.22	17	0.72	0.22	17	0.76	0.20	19	0.76	0.23	15	0.71	0.25	15	0.72	0.31	15	0.74	0.25	12	0.64	0.28	13	0.68	0.28

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	17	0.66	0.21	13	0.54	0.33	13	0.48	0.35	16	0.74	0.24	12	0.66	0.21	15	0.60	0.22	14	0.58	0.28	17	0.70	0.23
min2	17	0.73	0.22	13	0.66	0.29	13	0.62	0.34	16	0.78	0.25	12	0.76	0.16	15	0.78	0.16	14	0.68	0.24	17	0.79	0.17
min3	17	0.79	0.18	13	0.79	0.23	13	0.73	0.29	16	0.73	0.21	12	0.78	0.19	15	0.78	0.17	14	0.68	0.28	17	0.75	0.20
min4	17	0.67	0.29	13	0.74	0.18	13	0.70	0.28	16	0.79	0.16	12	0.67	0.19	15	0.76	0.19	14	0.71	0.21	17	0.78	0.21
min5	17	0.60	0.36	13	0.70	0.27	11	0.58	0.38	16	0.75	0.23	11	0.77	0.28	14	0.74	0.27	14	0.73	0.19	16	0.72	0.24
R																								
min1	16	0.57	0.30	14	0.61	0.24	14	0.59	0.26	16	0.67	0.23	12	0.63	0.26	15	0.64	0.19	14	0.67	0.18	17	0.67	0.18
min2	16	0.59	0.27	14	0.67	0.26	14	0.66	0.26	16	0.81	0.17	12	0.70	0.25	15	0.68	0.25	14	0.63	0.29	17	0.73	0.24
min3	16	0.72	0.27	14	0.69	0.24	14	0.65	0.28	16	0.78	0.20	12	0.73	0.18	15	0.77	0.26	14	0.76	0.18	17	0.71	0.26
min4	16	0.79	0.17	14	0.64	0.29	14	0.59	0.31	16	0.73	0.24	12	0.79	0.17	15	0.78	0.24	14	0.66	0.23	17	0.76	0.24
min5	16	0.76	0.25	14	0.69	0.23	12	0.63	0.34	16	0.77	0.19	11	0.78	0.17	15	0.71	0.29	12	0.73	0.26	15	0.84	0.15

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A12

Numbers, Means, and Standard Deviations of the Lateralis Right Gastrocnemius EMG During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	26	1.28	0.51	19	1.16	0.51	21	1.12	0.40	23	1.11	0.60	17	1.05	0.56	20	1.11	0.62	19	1.28	0.45	15	1.19	0.46	18	1.22	0.47
min2	26	1.36	0.45	20	1.27	0.59	20	1.08	0.39	23	1.22	0.71	17	1.15	0.68	20	1.12	0.61	19	1.29	0.47	15	1.32	0.48	17	1.19	0.48
min3	29	1.51	0.60	20	1.29	0.64	20	1.08	0.40	23	1.23	0.75	17	1.16	0.68	20	1.12	0.64	19	1.30	0.50	15	1.23	0.51	17	1.29	0.55
min4	27	1.43	0.53	20	1.28	0.61	20	1.12	0.45	23	1.21	0.68	16	1.12	0.66	20	1.13	0.66	19	1.30	0.47	15	1.26	0.56	18	1.32	0.55
min5	28	1.48	0.62	19	1.23	0.59	20	1.13	0.46	23	1.26	0.81	17	1.27	0.84	20	1.12	0.70	19	1.34	0.48	16	1.26	0.57	18	1.37	0.55
R																											
min1	26	1.35	0.53	20	1.24	0.50	21	1.13	0.42	23	1.16	0.64	17	1.01	0.56	20	1.18	0.77	21	1.29	0.50	15	1.12	0.48	17	1.12	0.57
min2	26	1.36	0.51	20	1.21	0.49	21	1.13	0.44	23	1.13	0.60	16	1.06	0.62	19	0.96	0.49	21	1.31	0.51	16	1.24	0.59	17	1.12	0.52
min3	26	1.34	0.51	20	1.26	0.50	21	1.15	0.48	24	1.20	0.71	16	1.11	0.63	20	1.09	0.62	21	1.39	0.51	15	1.17	0.53	18	1.18	0.51
min4	26	1.32	0.48	20	1.23	0.51	21	1.11	0.51	23	1.18	0.65	16	1.12	0.63	19	1.03	0.55	21	1.41	0.53	15	1.17	0.53	18	1.26	0.57
min5	25	1.35	0.49	20	1.30	0.55	21	1.11	0.52	23	1.17	0.64	16	1.09	0.65	20	1.11	0.71	21	1.40	0.51	16	1.24	0.59	17	1.18	0.50

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	18	1.25	0.59	15	1.12	0.48	16	1.46	0.59	17	1.10	0.59	13	1.29	0.61	17	1.34	0.73	15	1.42	0.60	18	1.50	0.66
min2	18	1.31	0.65	15	1.48	0.81	16	1.37	0.64	17	1.15	0.65	14	1.39	0.71	17	1.43	0.81	15	1.42	0.58	18	1.59	0.65
min3	18	1.24	0.56	13	1.27	0.45	16	1.38	0.71	17	1.11	0.60	14	1.37	0.71	17	1.47	0.84	15	1.45	0.57	18	1.66	0.71
min4	18	1.35	0.74	15	1.54	0.84	16	1.47	0.72	17	1.16	0.65	13	1.16	0.54	17	1.48	0.84	15	1.46	0.62	18	1.61	0.77
min5	19	1.36	0.66	13	1.26	0.45	16	1.47	0.73	17	1.18	0.63	13	1.17	0.54	17	1.39	0.74	15	1.44	0.61	18	1.63	0.79
R																								
min1	19	1.33	0.66	15	1.26	0.66	18	1.37	0.75	15	1.00	0.43	13	1.18	0.45	17	1.24	0.58	15	1.43	0.58	18	1.39	0.63
min2	19	1.25	0.55	15	1.39	0.88	18	1.46	0.86	16	1.09	0.57	14	1.33	0.69	18	1.35	0.70	15	1.40	0.54	18	1.47	0.67
min3	19	1.21	0.54	14	1.21	0.56	16	1.29	0.69	16	1.11	0.57	14	1.34	0.71	18	1.39	0.73	15	1.44	0.55	18	1.56	0.75
min4	18	1.17	0.54	15	1.31	0.59	17	1.36	0.75	16	1.12	0.57	13	1.35	0.78	18	1.41	0.75	15	1.46	0.56	18	1.59	0.78
min5	18	1.24	0.65	16	1.50	0.71	17	1.36	0.72	16	1.12	0.58	13	1.33	0.77	18	1.41	0.75	15	1.46	0.56	18	1.59	0.78

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A13

Numbers, Means, and Standard Deviations of the Lateralis Left Gastrocnemius EMG During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	27	1.20	0.44	18	1.32	0.49	20	1.05	0.32	24	1.32	0.43	17	1.12	0.58	20	1.25	0.73	19	1.31	0.63	16	1.25	0.58	18	1.29	0.35
min2	28	1.22	0.49	19	1.41	0.56	20	1.05	0.32	24	1.38	0.53	17	1.32	0.66	20	1.24	0.71	18	1.15	0.54	15	1.27	0.55	18	1.29	0.39
min3	29	1.32	0.54	19	1.43	0.61	20	1.05	0.30	24	1.38	0.54	17	1.30	0.58	20	1.26	0.72	18	1.12	0.50	15	1.29	0.60	18	1.28	0.39
min4	29	1.37	0.64	18	1.40	0.61	20	1.07	0.31	24	1.38	0.50	17	1.36	0.63	20	1.27	0.76	19	1.22	0.58	15	1.34	0.60	18	1.28	0.38
min5	29	1.33	0.56	20	1.51	0.65	20	1.06	0.32	25	1.45	0.55	17	1.34	0.61	19	1.17	0.64	20	1.27	0.64	16	1.40	0.66	18	1.30	0.39
R																											
min1	28	1.29	0.48	20	1.39	0.56	21	1.14	0.39	24	1.58	0.71	16	1.10	0.51	20	1.33	0.89	19	1.27	0.60	16	1.30	0.64	18	1.26	0.37
min2	28	1.28	0.50	20	1.39	0.60	21	1.14	0.40	23	1.45	0.56	17	1.14	0.52	19	1.13	0.66	20	1.32	0.64	16	1.31	0.64	18	1.38	0.47
min3	27	1.26	0.46	19	1.32	0.55	21	1.16	0.40	24	1.47	0.55	17	1.17	0.55	19	1.12	0.64	20	1.23	0.60	15	1.28	0.59	18	1.34	0.41
min4	29	1.34	0.55	19	1.34	0.62	21	1.17	0.44	25	1.57	0.64	17	1.24	0.66	19	1.13	0.65	20	1.26	0.65	16	1.48	0.74	18	1.33	0.41
min5	28	1.34	0.58	19	1.33	0.61	21	1.18	0.44	23	1.44	0.53	17	1.22	0.62	19	1.16	0.68	21	1.32	0.70	14	1.39	0.71	18	1.33	0.41

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	19	1.25	0.54	16	1.20	0.43	13	1.24	0.60	16	1.06	0.39	14	1.34	0.73	17	1.49	0.48	13	1.35	0.54	19	1.56	0.48
min2	19	1.30	0.56	15	1.21	0.40	14	1.29	0.57	16	1.14	0.55	14	1.35	0.75	18	1.67	0.64	14	1.40	0.57	19	1.64	0.53
min3	19	1.28	0.58	15	1.24	0.46	14	1.31	0.57	16	1.11	0.45	14	1.32	0.75	18	1.76	0.72	15	1.37	0.66	18	1.60	0.53
min4	18	1.36	0.65	15	1.26	0.44	16	1.48	0.72	16	1.11	0.48	14	1.35	0.76	16	1.59	0.56	15	1.40	0.67	18	1.64	0.55
min5	18	1.41	0.69	15	1.29	0.48	16	1.49	0.71	16	1.08	0.45	14	1.33	0.76	16	1.59	0.56	15	1.39	0.66	18	1.63	0.57
R																								
min1	18	1.29	0.60	16	1.21	0.42	17	1.35	0.70	17	1.15	0.44	15	1.27	0.72	17	1.58	0.59	15	1.32	0.66	18	1.66	0.52
min2	18	1.28	0.58	16	1.25	0.45	17	1.37	0.71	17	1.15	0.43	14	1.33	0.76	17	1.60	0.57	15	1.32	0.66	18	1.69	0.54
min3	19	1.32	0.63	16	1.31	0.50	17	1.41	0.74	17	1.12	0.41	14	1.29	0.73	17	1.62	0.58	15	1.33	0.65	18	1.75	0.59
min4	19	1.31	0.65	16	1.43	0.55	17	1.41	0.74	17	1.11	0.42	14	1.36	0.78	17	1.64	0.58	15	1.33	0.65	18	1.74	0.58
min5	19	1.33	0.69	16	1.50	0.61	17	1.43	0.72	17	1.11	0.43	14	1.37	0.80	17	1.64	0.56	15	1.34	0.67	18	1.74	0.60

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A14

Numbers, Means, and Standard Deviations of the Right Forearm EMG During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	29	2.37	1.06	20	2.07	0.80	18	2.09	0.67	26	2.54	1.26	17	2.33	0.88	17	1.95	0.92	20	2.35	1.09	16	2.21	0.75	14	2.19	1.04
min2	29	2.36	1.18	18	1.95	0.76	20	2.23	0.86	26	2.67	1.29	17	2.14	0.66	18	2.23	1.29	20	2.27	0.98	16	2.28	0.80	15	2.22	1.20
min3	28	2.25	1.18	19	1.93	0.70	20	2.09	0.78	25	2.57	1.34	17	1.89	0.68	18	2.20	1.34	20	2.28	0.89	16	1.97	0.58	15	2.09	1.07
min4	27	2.06	0.97	20	1.86	0.74	20	1.91	0.74	26	2.69	1.54	17	1.91	0.72	17	2.13	1.43	20	2.18	0.87	16	1.89	0.70	15	1.88	0.89
min5	29	2.19	1.23	19	1.91	0.78	21	2.08	1.14	25	2.34	1.11	16	1.96	0.81	19	1.98	1.21	20	2.17	0.92	16	1.80	0.57	15	1.98	0.99
R																											
min1	28	2.02	0.97	20	2.13	1.10	18	2.02	0.76	25	2.23	1.02	17	1.93	1.01	17	2.17	0.85	19	2.54	1.12	15	2.06	0.75	17	2.28	0.96
min2	29	2.11	0.95	20	2.13	1.03	18	1.91	0.78	25	2.32	1.06	16	1.70	0.67	17	2.16	1.04	18	2.30	0.98	16	2.07	0.92	17	2.26	1.01
min3	29	2.01	0.93	19	2.05	0.90	17	1.74	0.66	25	2.23	1.04	16	1.76	0.59	18	2.22	1.27	19	2.38	1.03	16	2.11	1.15	16	2.19	1.02
min4	29	1.98	1.02	19	1.90	0.78	17	1.80	0.82	24	2.21	0.85	17	1.95	1.00	18	2.07	1.21	19	2.29	1.08	15	1.98	0.98	18	2.48	1.32
min5	28	1.91	1.01	20	1.85	0.67	18	1.86	0.84	23	2.01	0.62	16	1.71	0.64	18	1.87	1.10	19	2.27	1.00	15	1.93	0.90	17	2.27	1.30

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	17	2.25	0.76	16	2.49	0.89	17	2.81	1.40	14	2.09	0.74	15	2.70	0.80	15	2.51	1.00	15	2.78	1.44	18	2.85	1.41
min2	18	2.29	1.10	15	2.35	0.81	16	2.82	1.37	15	2.39	1.11	15	2.49	0.78	15	2.52	1.06	14	2.48	1.13	18	2.88	1.46
min3	17	1.98	0.83	15	2.17	0.82	15	2.60	1.16	14	2.34	1.10	15	2.48	0.71	16	2.47	1.08	14	2.49	1.23	17	2.79	1.17
min4	18	2.16	1.04	15	2.09	0.81	15	2.45	1.05	14	2.13	0.84	15	2.19	0.69	15	2.19	0.94	14	2.45	1.30	17	2.91	1.29
min5	18	2.01	1.04	15	2.11	0.83	15	2.30	1.07	15	2.17	1.07	14	2.16	0.76	16	2.40	1.03	14	2.14	1.12	18	3.00	1.35
R																								
min1	16	2.11	0.75	16	2.21	0.52	15	2.21	0.96	15	2.06	0.61	15	1.90	0.85	17	2.48	0.91	12	2.58	1.24	18	2.80	1.43
min2	16	2.03	0.81	16	2.04	0.56	16	2.31	1.00	15	2.01	0.65	15	1.85	0.89	18	2.55	0.93	13	2.88	1.49	18	2.73	1.43
min3	16	2.06	0.94	15	1.95	0.51	17	2.40	0.98	15	1.93	0.73	15	1.78	0.89	18	2.47	0.93	13	2.71	1.31	16	2.30	1.05
min4	16	1.97	0.82	15	1.88	0.50	17	2.35	0.84	15	1.80	0.79	15	1.66	0.78	17	2.36	0.98	12	2.40	1.21	18	2.64	1.45
min5	17	2.10	0.92	16	1.92	0.74	17	2.35	0.91	14	1.60	0.53	15	1.76	0.76	17	2.23	0.87	12	2.35	1.27	17	2.46	1.13

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A15

Numbers, Means, and Standard Deviations of the Left Forearm EMG During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	29	2.72	1.40	19	2.09	0.79	21	2.59	1.09	24	2.19	1.00	16	2.12	0.80	20	2.82	1.07	21	2.65	1.32	15	2.40	1.26	17	2.62	1.24
min2	28	2.68	1.44	19	2.25	1.10	20	2.35	0.79	24	2.41	1.26	16	2.16	0.73	19	2.65	1.10	20	2.47	1.20	15	2.23	1.11	18	2.63	1.29
min3	28	2.61	1.38	18	1.91	0.94	20	2.37	0.82	24	2.56	1.60	16	2.22	0.90	19	2.34	1.17	18	2.29	0.97	16	2.17	0.79	16	2.37	1.18
min4	25	2.36	1.02	19	1.92	0.82	21	2.45	0.88	24	2.38	1.37	16	2.40	1.33	20	2.28	1.10	19	2.67	1.21	16	2.00	0.65	16	2.48	1.19
min5	25	2.16	0.95	19	1.95	0.89	21	2.35	0.78	25	2.27	1.38	15	2.05	0.98	20	2.18	1.13	20	2.62	1.28	16	2.11	0.88	16	2.48	1.45
R																											
min1	27	2.39	1.30	19	2.40	1.26	20	2.74	1.20	23	2.20	1.08	16	1.91	0.85	20	2.55	1.01	20	2.24	0.89	14	2.23	0.69	16	2.34	1.16
min2	28	2.33	1.30	19	2.27	1.14	20	2.66	1.06	23	2.18	1.00	16	1.92	0.94	20	2.32	0.94	21	2.30	0.94	14	2.09	0.79	15	1.93	0.76
min3	27	2.14	1.09	19	2.02	0.85	20	2.49	0.94	22	1.96	0.90	17	1.93	1.08	20	2.30	1.01	21	2.37	1.14	14	2.02	0.89	16	2.14	0.96
min4	28	2.27	1.25	20	2.12	1.19	21	2.51	1.15	22	1.87	0.93	17	1.81	0.82	20	2.27	1.24	21	2.31	1.20	14	1.96	0.89	16	2.19	1.05
min5	26	1.99	1.08	20	2.09	1.08	21	2.39	1.06	22	1.79	0.97	17	1.78	0.80	19	2.11	1.09	21	2.26	1.18	16	2.26	1.28	16	2.10	1.20

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	18	3.13	1.70	16	2.88	1.72	17	3.24	1.69	17	2.59	1.05	14	2.82	1.15	16	2.47	1.02	14	2.77	1.10	17	2.65	0.96
min2	18	2.96	1.62	15	2.89	1.63	16	2.83	1.52	17	2.67	1.18	13	2.59	1.07	15	2.26	0.97	15	3.05	1.65	17	2.71	1.03
min3	18	2.99	1.58	15	2.66	1.55	16	2.58	1.38	16	2.36	0.98	13	2.52	0.91	15	2.08	0.86	15	2.76	1.56	17	2.62	1.15
min4	18	3.08	1.65	15	2.58	1.47	16	2.52	1.39	16	2.31	0.99	14	2.71	0.99	14	1.94	0.69	15	2.60	1.58	17	2.59	1.07
min5	18	2.82	1.48	15	2.63	1.41	16	2.60	1.49	15	2.15	0.94	14	2.39	0.88	16	2.29	1.11	14	2.30	1.14	17	2.28	0.76
R																								
min1	18	2.65	1.11	16	2.52	0.89	16	2.29	0.89	16	2.48	1.06	14	2.42	1.21	16	2.77	1.17	13	2.46	1.02	18	2.57	1.17
min2	18	2.42	1.04	15	2.26	0.88	15	2.25	0.88	15	2.11	1.02	14	2.31	1.10	17	2.83	1.31	14	2.64	1.35	18	2.57	1.23
min3	17	2.13	0.86	16	2.23	0.87	16	2.08	0.83	15	2.06	0.95	14	2.21	1.03	16	2.57	1.14	14	2.50	1.25	18	2.51	1.20
min4	17	1.94	0.83	16	2.28	0.90	17	2.20	1.00	15	1.97	1.08	14	2.01	0.89	17	2.70	1.41	13	2.31	1.20	17	2.30	0.99
min5	18	2.07	1.02	15	2.17	0.72	17	2.15	1.05	15	1.94	1.09	15	2.10	1.14	16	2.34	1.05	14	2.22	1.14	17	2.29	0.97

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A16

Numbers, Means, and Standard Deviations of the Upper Trapezius EMG (Non-Dominant Side) During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5					
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC	
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	29	6.87	3.00	19	5.90	2.32	21	6.08	2.04	25	6.02	2.16	17	6.02	3.01	19	5.20	1.61	19	6.20	2.40	16	5.50	2.02	17	6.25	2.57
min2	29	6.86	2.84	19	5.93	2.32	21	6.47	2.85	25	6.06	2.28	17	5.94	2.41	19	5.12	1.57	19	6.21	2.33	16	5.67	2.12	17	5.93	1.97
min3	29	6.74	2.73	19	5.73	2.35	21	6.02	2.12	25	6.00	2.14	17	5.79	2.17	19	5.06	1.59	20	6.70	3.01	16	5.74	2.11	17	5.62	2.08
min4	29	6.74	2.67	19	5.64	2.36	21	5.76	1.96	25	6.11	2.82	17	5.87	2.27	19	5.04	1.59	20	6.26	2.22	16	5.80	2.16	17	5.43	2.14
min5	29	6.69	2.71	19	5.51	2.27	21	5.52	1.54	25	6.25	3.15	17	5.99	2.35	19	5.06	1.64	20	6.13	2.36	16	5.80	2.19	18	6.06	3.05
R																											
min1	28	6.35	2.78	19	5.29	2.25	20	5.30	2.05	24	5.90	2.02	16	5.26	1.98	18	5.93	2.06	21	6.19	2.54	15	5.65	2.05	16	5.63	2.09
min2	28	6.24	2.39	19	5.23	2.25	19	4.88	1.35	24	5.89	2.05	16	5.50	2.05	19	5.61	1.59	21	6.33	2.54	15	5.77	2.17	16	5.65	2.72
min3	28	6.23	2.40	19	5.58	2.43	19	4.91	1.36	24	5.94	2.07	16	5.56	2.25	19	5.51	1.66	21	6.44	2.74	15	5.75	2.17	16	5.54	2.53
min4	28	6.11	2.36	19	5.74	2.71	21	5.58	2.65	24	6.04	2.19	16	5.67	2.37	19	5.91	2.27	20	6.30	2.50	15	5.75	2.24	16	5.15	2.00
min5	27	5.99	2.37	18	5.59	2.78	21	5.30	2.13	23	6.18	2.21	17	6.12	3.11	19	5.87	2.18	20	6.36	2.62	15	5.79	2.25	16	5.09	2.02

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	19	5.82	2.41	15	5.06	1.62	17	5.52	2.19	15	6.07	2.17	15	6.64	2.98	17	6.02	2.93	14	6.43	1.90	18	5.20	2.04
min2	19	5.84	2.42	14	5.11	1.28	15	5.39	1.89	16	6.53	2.70	14	6.01	2.22	17	5.98	2.44	14	6.47	2.00	18	5.36	2.06
min3	19	5.86	2.34	14	5.04	1.39	15	5.19	1.58	16	6.31	2.52	14	5.89	2.16	17	5.89	2.50	14	6.66	2.11	18	5.28	2.03
min4	19	5.88	2.33	14	4.99	1.49	17	6.49	3.47	16	6.12	2.23	15	6.25	2.70	17	5.98	2.05	14	6.59	2.54	18	5.33	2.03
min5	19	5.76	2.45	14	5.02	1.55	17	6.09	3.24	16	5.94	2.19	15	6.19	2.97	17	5.66	1.88	14	6.77	2.57	18	5.31	2.15
R																								
min1	19	5.87	2.54	15	4.86	1.41	18	5.89	3.49	16	6.32	2.86	14	5.79	2.27	18	5.31	1.86	14	5.83	2.10	19	5.62	2.17
min2	19	6.14	2.85	15	5.07	1.66	18	5.98	3.60	16	6.35	2.76	14	5.87	2.26	18	5.33	1.95	13	5.51	1.78	19	5.79	2.20
min3	19	5.97	2.62	15	4.99	1.66	18	6.05	3.52	16	6.28	2.69	15	6.15	2.49	18	5.56	2.05	14	5.85	2.22	19	5.93	2.33
min4	19	5.80	2.48	15	4.96	1.72	18	5.89	3.19	16	6.27	2.71	15	5.92	2.16	17	5.46	1.93	14	5.81	2.26	18	5.84	2.51
min5	19	5.65	2.21	15	4.82	1.59	18	5.94	3.17	16	6.13	2.42	15	5.74	2.23	17	5.37	2.06	15	6.08	2.43	18	5.93	2.56

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A17

Numbers, Means, and Standard Deviations of the Lateralis Frontalis EMG (Non-Dominant Side) During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	25	6.65	5.27	18	7.51	4.43	19	5.77	4.83	22	6.43	4.62	16	7.47	4.81	16	6.28	4.58	21	5.87	4.80	15	6.62	4.77	16	6.87	5.09
min2	24	7.01	5.56	18	7.89	4.70	21	7.33	5.74	22	6.57	4.55	16	7.33	4.80	17	6.80	5.02	21	6.24	5.49	15	7.39	5.05	16	7.00	4.96
min3	23	6.60	5.07	18	8.06	4.55	21	6.98	5.09	22	6.96	4.48	15	7.29	4.87	17	6.71	4.47	20	6.10	5.22	15	7.37	5.48	17	8.22	5.77
min4	24	7.55	5.75	17	7.00	2.90	21	7.15	5.11	21	6.56	4.08	16	8.47	5.55	18	7.79	5.59	20	6.01	4.81	14	7.75	5.97	16	7.96	4.53
min5	24	7.83	5.93	18	7.83	4.05	21	7.23	4.80	22	7.23	4.89	16	8.81	5.57	18	8.45	5.71	20	6.13	5.14	14	7.91	5.21	16	7.76	4.70
R																											
min1	24	5.29	3.98	19	6.59	4.06	21	5.74	4.54	20	4.67	2.68	16	5.12	2.89	17	5.26	2.95	20	4.78	3.95	15	4.73	3.58	17	6.01	4.04
min2	24	6.27	4.71	19	6.38	3.96	21	6.17	4.25	20	5.19	3.22	16	5.67	3.09	18	5.79	3.05	20	4.15	3.29	15	5.29	3.84	17	6.70	4.48
min3	22	5.73	4.16	19	6.73	4.14	21	6.10	3.64	21	5.80	3.67	16	6.28	3.09	18	6.64	3.68	20	4.80	4.02	15	5.00	3.15	15	5.74	3.34
min4	22	5.85	4.03	19	7.13	4.57	21	6.68	4.26	21	6.01	3.75	16	6.68	3.52	17	6.90	4.21	19	4.85	4.47	15	5.74	4.38	17	7.52	5.22
min5	22	6.13	4.24	19	7.50	4.76	20	6.16	3.54	20	6.59	4.39	17	8.45	4.71	18	7.60	4.40	19	5.46	5.07	15	6.01	4.35	16	7.10	4.24

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	17	7.11	6.07	13	4.97	3.98	16	5.67	4.93	12	4.29	2.39	12	4.92	2.70	13	4.18	2.23	12	4.64	3.30	13	6.14	3.87
min2	17	7.76	6.42	12	6.16	5.56	15	7.38	6.18	13	5.18	2.73	11	4.87	2.73	13	4.81	2.67	12	4.67	3.23	14	6.68	4.27
min3	17	8.24	6.88	11	5.67	3.08	15	7.22	6.06	14	5.94	3.14	11	5.16	2.65	13	5.62	3.14	12	5.27	3.10	13	6.06	3.76
min4	17	8.42	6.67	11	5.86	3.04	15	7.31	5.65	14	6.33	3.44	11	5.73	2.61	13	6.08	3.21	11	4.72	1.89	14	7.70	4.28
min5	16	7.70	6.14	11	6.42	3.88	15	7.01	5.04	13	6.41	3.38	11	5.59	2.66	13	6.45	3.57	11	4.75	2.04	14	8.07	4.54
R																								
min1	17	6.35	5.89	13	5.87	5.13	16	5.08	3.49	11	3.52	2.22	12	2.94	2.04	14	3.76	2.15	10	2.78	0.81	14	4.63	2.79
min2	17	6.62	6.45	12	4.74	3.23	16	5.26	3.60	12	4.37	3.57	12	3.41	2.36	14	4.33	1.87	10	2.93	1.10	13	5.06	2.85
min3	17	7.07	7.06	12	4.56	2.77	17	6.27	4.94	12	4.82	3.92	11	3.20	0.98	14	5.05	2.10	10	3.27	1.12	12	5.26	2.55
min4	17	7.03	6.97	12	5.03	3.69	17	6.57	5.06	12	5.01	3.97	11	3.62	1.49	14	5.65	2.03	10	3.23	1.22	14	6.76	3.64
min5	17	6.97	6.72	13	6.15	5.77	17	6.64	4.86	12	5.39	4.06	11	3.99	1.74	14	5.76	1.81	10	3.22	1.28	14	7.17	3.84

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A18

Numbers, Means, and Standard Deviations of Heart Rate During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
bsp min1	26	74.22	7.75	16	75.41	8.27	19	68.33	8.48	22	74.94	10.21	14	76.30	10.75	19	71.59	8.08	18	76.75	12.80	13	79.43	16.34	13	75.72	13.36
sp min1	26	74.63	9.13	17	75.51	8.93	20	68.85	9.96	22	74.79	9.98	14	76.78	10.75	19	71.65	8.21	19	76.93	13.22	12	75.84	12.20	14	72.16	8.90
sp min2	26	73.81	8.32	17	74.32	8.81	20	67.91	8.16	22	74.36	9.76	11	77.31	8.64	19	71.57	8.07	18	76.91	13.33	12	75.95	12.39	14	71.41	8.86
min1	27	70.12	8.32	17	69.30	7.89	20	63.86	9.26	21	70.22	8.72	14	71.87	9.61	19	66.87	6.89	19	72.14	10.53	14	72.74	10.71	15	67.40	8.06
min2	27	70.23	8.90	17	70.68	8.30	20	64.58	8.68	21	70.14	9.28	14	72.83	9.77	19	68.47	7.61	19	71.83	10.95	14	75.01	14.16	15	68.51	8.30
min3	26	69.42	7.17	17	70.70	8.25	20	64.52	7.76	22	71.89	10.30	15	73.11	10.74	19	67.94	7.78	18	70.22	8.38	14	74.38	12.90	15	68.35	8.70
min4	27	70.60	8.68	17	70.33	8.41	20	63.71	8.51	22	71.34	10.08	15	72.92	11.31	19	67.78	7.37	18	70.31	8.34	14	75.20	13.52	15	68.32	9.44
min5	27	70.75	8.80	17	71.67	8.62	20	63.74	8.10	21	70.13	9.05	15	73.59	10.69	19	67.19	7.50	18	70.22	8.91	14	75.30	14.01	15	68.50	8.83
R																											
bsp min1	25	73.79	8.10	16	76.80	8.23	17	68.07	9.18	21	74.24	9.00	15	78.61	11.11	19	71.17	8.41	17	74.01	10.09	11	77.05	11.95	13	74.17	10.62
sp min1	25	73.76	6.56	16	76.48	8.72	20	68.90	9.01	21	74.33	8.91	15	77.85	10.88	19	71.75	8.54	18	74.58	9.46	12	76.07	12.58	14	71.74	10.19
sp min2	25	74.14	7.57	16	74.54	8.64	18	68.32	9.19	22	75.06	9.29	14	79.79	11.13	18	71.29	7.89	18	74.21	8.30	11	76.51	12.41	13	71.68	8.86
min1	25	69.22	6.82	16	69.83	7.06	20	63.38	9.03	21	71.78	8.97	15	73.09	10.50	19	66.78	8.14	18	70.36	9.01	13	71.67	10.22	15	66.90	8.40
min2	25	69.97	7.18	16	70.44	7.37	19	64.53	7.87	21	72.47	9.11	15	74.09	11.28	19	67.79	7.87	18	70.78	9.19	13	72.51	10.36	15	67.83	8.53
min3	26	70.60	7.77	16	70.51	8.00	19	64.50	7.88	21	72.17	9.85	15	73.31	10.28	19	67.58	7.70	18	70.43	8.49	13	72.07	10.95	15	66.96	8.23
min4	26	70.57	8.07	16	70.62	8.54	20	63.64	8.11	21	72.27	9.69	15	73.85	10.56	19	66.89	7.77	18	70.70	9.13	13	72.32	10.94	15	67.38	8.72
min5	25	70.25	8.00	16	70.45	8.61	19	64.64	8.26	21	73.09	10.32	15	73.42	10.75	19	66.91	8.20	18	70.15	8.90	13	72.23	11.18	15	67.26	8.62

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
bsp min1	18	76.26	10.87	15	76.77	11.35	12	71.65	9.70	15	76.32	8.07	12	74.69	10.62	14	72.45	8.76	13	77.20	5.85	13	72.46	12.82
sp min1	17	75.87	8.27	15	76.91	11.04	14	73.75	8.41	16	76.17	6.59	12	78.16	10.05	15	73.93	8.52	14	78.29	6.33	16	73.51	12.00
sp min2	17	75.70	7.08	13	75.96	10.91	14	75.40	8.99	16	75.41	6.33	12	78.62	9.94	15	74.16	9.14	14	78.28	6.31	16	72.85	11.51
min1	18	73.17	9.36	12	73.38	8.11	13	71.06	6.78	16	71.25	7.83	14	74.48	9.70	15	70.16	8.92	14	74.76	5.82	17	69.00	10.21
min2	18	73.30	8.87	14	73.09	10.33	13	72.05	8.22	16	73.08	8.62	14	74.46	9.97	15	70.33	8.66	14	74.30	5.69	16	68.22	9.31
min3	18	73.36	8.62	12	73.13	8.05	13	71.38	7.87	15	71.65	7.95	14	73.30	9.79	15	70.00	9.18	14	74.53	6.07	16	68.14	10.23
min4	18	73.47	9.03	13	74.33	8.81	13	71.03	7.65	16	72.60	8.24	14	73.97	10.11	15	69.24	9.75	14	74.28	5.84	17	69.25	10.81
min5	18	72.31	9.46	13	73.45	8.72	13	70.56	7.79	16	72.06	8.41	14	73.38	9.49	14	70.71	8.39	14	74.18	6.03	17	68.13	10.09
R																								
bsp min1	17	74.95	8.59	13	76.98	12.44	13	71.13	9.37	16	75.26	7.93	12	78.63	8.81	13	74.88	8.09	13	76.98	6.91	12	72.56	11.11
sp min1	16	74.28	6.81	14	77.62	11.14	15	71.68	9.15	16	75.06	7.13	13	79.73	9.16	14	75.67	7.79	14	77.91	7.50	16	72.62	11.57
sp min2	16	73.81	6.61	14	77.46	12.35	15	71.43	9.62	16	75.48	6.42	13	79.79	9.42	15	74.32	7.87	14	78.20	6.67	15	73.02	10.28
min1	16	70.78	7.85	14	71.92	9.74	13	69.53	7.56	16	70.48	7.99	13	74.92	7.54	15	69.23	8.23	14	73.35	6.09	17	68.44	9.72
min2	16	71.04	7.13	14	72.02	10.57	13	70.12	8.40	16	71.08	7.98	13	75.23	7.81	15	70.71	8.68	14	73.54	5.94	17	68.62	10.62
min3	16	71.10	6.90	14	73.05	9.88	13	69.57	8.41	16	70.90	8.21	14	73.20	9.55	15	69.88	9.02	14	74.55	6.64	17	68.60	9.64
min4	16	70.84	7.23	13	71.26	9.71	13	69.38	7.97	16	70.86	8.51	14	73.19	9.37	15	69.78	8.62	14	74.16	5.79	17	68.39	10.02
min5	16	71.17	6.76	13	74.48	8.93	13	69.71	8.14	16	71.04	7.78	14	72.77	9.63	15	69.84	8.68	14	75.03	6.24	17	68.97	11.44

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; bsp = before speech; sp = speech.

Table A19

Numbers, Means, and Standard Deviations of Transfer-Function Respiratory Sinus Arrhythmia During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	27	0.13	0.07	15	0.10	0.05	14	0.15	0.09	20	0.12	0.07	13	0.11	0.06	15	0.12	0.07	12	0.14	0.07	9	0.08	0.05	8	0.20	0.09
min2	28	0.13	0.09	16	0.10	0.06	14	0.13	0.08	20	0.12	0.07	11	0.11	0.05	14	0.12	0.06	11	0.17	0.09	8	0.09	0.04	10	0.17	0.09
min3	28	0.14	0.08	16	0.10	0.07	14	0.14	0.11	18	0.12	0.08	12	0.14	0.10	14	0.14	0.07	13	0.16	0.08	9	0.08	0.05	11	0.15	0.08
min4	28	0.15	0.09	16	0.12	0.09	14	0.14	0.09	20	0.13	0.07	12	0.12	0.08	15	0.13	0.07	12	0.14	0.07	9	0.08	0.05	10	0.15	0.07
min5	27	0.13	0.09	16	0.14	0.11	13	0.13	0.09	17	0.12	0.05	12	0.13	0.09	13	0.12	0.06	14	0.14	0.06	9	0.08	0.06	10	0.14	0.05
R																											
min1	26	0.13	0.08	15	0.12	0.08	15	0.09	0.06	16	0.13	0.10	13	0.11	0.05	16	0.12	0.07	14	0.16	0.09	9	0.08	0.04	10	0.16	0.10
min2	26	0.14	0.09	16	0.12	0.08	15	0.13	0.10	18	0.10	0.07	14	0.11	0.06	15	0.14	0.08	14	0.14	0.07	8	0.11	0.05	12	0.14	0.05
min3	25	0.10	0.06	16	0.13	0.09	15	0.12	0.09	15	0.11	0.07	14	0.11	0.07	15	0.13	0.08	14	0.17	0.06	9	0.08	0.03	12	0.16	0.07
min4	24	0.11	0.07	16	0.14	0.10	15	0.13	0.10	20	0.11	0.08	14	0.12	0.06	15	0.14	0.07	14	0.14	0.06	5	0.07	0.03	13	0.15	0.06
min5	24	0.12	0.08	16	0.13	0.10	14	0.15	0.08	15	0.14	0.12	10	0.11	0.07	11	0.19	0.12	11	0.16	0.07	7	0.09	0.05	10	0.13	0.03

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	13	0.10	0.06	8	0.10	0.04	5	0.17	0.10	12	0.16	0.09	9	0.09	0.09	9	0.12	0.05	10	0.15	0.08	12	0.11	0.07
min2	15	0.11	0.07	9	0.11	0.04	7	0.22	0.09	14	0.14	0.10	11	0.08	0.04	13	0.12	0.09	11	0.12	0.10	16	0.14	0.08
min3	15	0.11	0.07	11	0.13	0.10	9	0.16	0.13	12	0.13	0.08	11	0.11	0.08	13	0.13	0.09	9	0.12	0.08	14	0.12	0.07
min4	12	0.11	0.07	11	0.15	0.09	10	0.17	0.12	14	0.12	0.09	9	0.10	0.07	12	0.14	0.07	11	0.12	0.08	15	0.13	0.08
min5	11	0.11	0.07	11	0.11	0.04	5	0.20	0.09	14	0.15	0.09	9	0.07	0.04	11	0.13	0.05	10	0.15	0.09	14	0.13	0.09
R																								
min1	9	0.16	0.10	11	0.12	0.05	8	0.18	0.13	10	0.17	0.09	9	0.10	0.05	12	0.13	0.06	8	0.14	0.12	14	0.13	0.07
min2	9	0.18	0.13	10	0.16	0.10	10	0.13	0.11	12	0.17	0.10	9	0.10	0.05	10	0.14	0.09	10	0.17	0.10	14	0.12	0.06
min3	14	0.15	0.10	8	0.09	0.05	10	0.16	0.12	12	0.13	0.08	10	0.10	0.05	13	0.14	0.07	10	0.16	0.13	13	0.11	0.05
min4	15	0.16	0.12	10	0.13	0.09	7	0.17	0.15	11	0.14	0.07	11	0.10	0.06	11	0.13	0.05	9	0.17	0.12	15	0.15	0.12
min5	14	0.15	0.13	11	0.12	0.06	7	0.16	0.09	13	0.17	0.13	10	0.09	0.05	10	0.14	0.09	8	0.22	0.12	15	0.13	0.06

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A20

Numbers, Means, and Standard Deviations of end-tidal pCO_2 During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	26	34.38	2.91	20	34.39	3.03	21	35.89	2.71	24	36.98	3.20	16	36.23	3.05	20	37.72	2.91	19	35.37	3.48	15	36.62	2.50	16	37.52	3.02
min2	27	35.14	3.53	18	35.39	2.47	21	36.71	3.34	24	37.24	3.45	17	37.18	2.94	19	37.77	2.44	19	36.25	3.31	16	37.82	2.96	16	37.74	3.02
min3	27	34.98	2.78	20	35.30	3.07	20	37.37	2.38	23	37.53	3.18	17	37.57	2.79	20	37.93	2.71	19	36.57	2.78	16	38.17	2.83	16	37.86	2.69
min4	28	35.26	3.23	19	35.13	2.66	20	37.53	2.30	23	38.36	2.81	17	37.54	2.82	20	38.16	2.34	19	36.79	3.05	15	37.52	2.49	16	38.00	2.54
min5	27	35.58	3.33	20	34.98	3.42	20	37.45	3.01	22	37.80	2.80	17	37.55	2.62	20	38.07	2.39	19	36.84	2.68	16	38.00	2.49	16	37.95	2.48
R																											
min1	28	33.53	3.92	20	33.73	2.96	21	36.34	2.86	25	36.26	3.43	16	35.74	2.95	19	36.88	2.64	18	36.12	3.23	16	36.81	2.48	17	36.86	2.98
min2	28	33.60	3.91	20	35.38	3.30	20	37.54	3.14	24	36.63	3.32	16	36.58	3.36	20	37.66	3.33	18	36.56	3.32	16	37.25	2.66	18	38.07	3.41
min3	26	34.17	3.79	20	35.32	3.12	21	37.42	4.23	24	36.98	3.38	16	36.75	3.30	20	37.76	3.30	18	36.58	3.48	16	37.74	2.27	18	38.05	3.27
min4	28	34.98	4.40	20	35.83	2.81	21	37.60	3.77	24	37.34	3.29	16	37.14	3.16	20	37.94	3.39	18	36.87	3.18	16	37.95	2.38	18	38.19	3.23
min5	26	34.89	4.02	20	35.47	2.83	21	37.39	3.91	23	37.13	3.60	16	37.14	3.23	19	38.24	2.83	18	36.89	3.19	16	38.07	2.58	18	38.23	3.32

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	18	35.70	3.01	15	36.54	2.86	16	35.82	3.31	15	35.96	2.76	13	36.77	2.53	18	38.13	2.41	15	34.74	3.43	18	37.71	2.52
min2	18	36.10	2.97	15	37.41	3.30	15	37.29	2.33	15	36.82	2.70	14	37.77	2.42	18	38.01	2.95	14	35.67	3.10	18	38.20	2.98
min3	18	36.70	3.14	14	37.17	2.54	16	37.24	2.56	16	37.81	3.14	14	38.26	2.71	18	37.98	3.03	14	36.86	2.35	18	38.57	2.96
min4	18	36.72	3.07	15	37.68	2.63	15	37.44	2.43	16	38.06	3.06	13	38.02	2.06	18	38.40	2.82	14	37.13	2.37	18	38.55	2.86
min5	18	36.49	3.08	14	37.54	2.55	16	37.29	2.36	16	38.23	3.21	14	38.37	2.70	18	38.33	2.73	14	37.26	2.49	18	38.55	2.40
R																								
min1	18	35.21	3.01	15	35.17	2.90	16	36.43	3.01	15	35.83	3.04	15	37.12	3.06	17	36.81	2.40	15	35.11	3.15	18	37.76	2.97
min2	17	36.59	3.12	15	36.53	2.77	17	37.26	3.75	16	37.20	3.37	14	37.09	1.76	18	37.50	3.28	15	35.71	3.43	18	38.14	3.23
min3	18	36.88	3.33	15	37.10	2.90	17	37.15	3.19	16	37.41	3.33	14	37.51	1.59	18	37.93	3.25	15	36.08	3.68	18	38.40	3.30
min4	18	37.03	3.29	16	37.51	3.03	17	37.16	3.24	16	37.57	3.14	14	38.05	1.96	18	38.05	3.16	15	36.40	3.29	18	38.55	3.27
min5	18	36.99	3.28	16	37.48	3.05	17	37.49	3.21	16	37.65	2.98	14	38.47	2.32	17	38.08	2.31	15	36.56	3.32	18	38.78	3.37

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A21

Numbers, Means, and Standard Deviations of Respiratory Rate During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	27	11.37	3.85	20	12.25	3.80	17	10.53	3.49	25	13.01	4.25	17	12.91	4.03	20	12.90	4.10	20	12.61	4.21	15	13.12	3.98	15	13.19	4.12
min2	28	12.74	4.08	20	12.39	4.34	17	10.81	3.41	24	14.04	4.12	17	13.75	4.41	20	14.75	4.10	20	13.96	4.04	15	13.63	3.80	15	13.40	4.56
min3	29	13.65	4.04	20	11.73	4.66	17	11.26	4.22	25	14.37	4.09	17	14.35	3.61	20	15.16	4.16	20	14.01	4.13	15	13.86	4.37	15	13.57	4.23
min4	29	13.54	4.15	20	12.44	4.47	17	10.68	3.73	24	15.07	3.63	16	15.07	2.81	20	14.88	3.99	20	14.08	3.55	15	14.78	3.10	15	13.41	4.86
min5	29	12.97	4.14	20	12.55	4.98	17	11.15	3.24	24	15.58	3.72	17	15.14	3.16	20	15.00	3.81	20	14.91	3.73	15	14.77	3.39	14	14.02	4.46
R																											
min1	27	9.86	3.26	20	10.27	3.37	18	9.36	2.72	25	11.91	4.07	16	11.11	3.98	20	11.69	4.10	19	11.17	3.94	15	10.15	3.64	16	12.47	5.63
min2	29	10.83	4.20	20	10.86	4.73	19	10.97	3.55	24	12.55	4.19	17	12.14	4.80	20	13.11	5.22	20	12.42	4.47	15	11.59	4.97	16	12.23	5.22
min3	28	10.72	3.76	19	10.61	4.26	19	10.20	3.01	25	13.23	4.23	16	12.99	4.87	20	13.85	4.35	19	12.39	3.29	15	11.24	4.47	15	11.41	4.27
min4	28	10.81	4.18	20	10.85	4.41	20	11.06	3.51	25	13.62	4.26	16	12.65	4.13	20	13.36	4.57	20	13.14	3.37	15	11.71	4.31	14	11.62	4.38
min5	28	10.78	3.97	20	11.24	4.74	20	11.05	3.42	24	13.31	4.16	16	13.06	4.22	20	14.04	4.53	20	13.18	3.51	15	12.04	4.96	16	12.88	4.38

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	18	13.61	3.42	14	14.16	3.10	15	13.29	3.15	17	11.68	3.38	12	13.19	3.50	15	11.20	2.91	15	11.94	3.53	19	13.25	4.26
min2	17	15.33	2.93	14	15.62	2.91	15	14.31	3.04	17	13.38	3.62	11	14.18	3.53	17	14.18	3.97	15	12.99	3.80	19	15.26	5.26
min3	17	15.11	2.40	14	15.71	2.24	14	14.59	3.61	17	13.78	3.02	12	15.40	3.30	16	14.65	3.50	14	14.10	3.17	18	15.51	4.55
min4	16	16.34	2.20	14	16.34	2.25	15	15.57	2.70	17	14.54	2.95	11	14.40	2.49	17	14.64	4.30	15	14.45	4.12	19	16.14	4.97
min5	18	15.44	3.14	14	16.30	1.87	15	15.36	3.40	16	14.25	2.45	12	15.71	2.14	15	14.92	3.52	15	14.29	4.09	19	15.34	3.79
R																								
min1	17	11.99	3.44	14	12.31	3.88	17	11.35	3.38	17	10.19	3.31	13	10.31	3.95	14	10.77	3.23	14	9.80	3.17	19	11.98	5.36
min2	17	11.33	3.42	15	12.52	4.97	16	12.06	3.52	17	10.58	3.23	13	11.13	4.68	14	12.63	3.97	15	11.77	4.62	17	12.69	4.96
min3	18	12.21	3.54	14	14.20	4.57	17	13.12	4.07	17	11.44	3.85	12	12.46	3.89	16	13.71	5.08	15	12.12	4.55	18	14.78	4.96
min4	18	12.41	3.40	13	14.36	4.05	17	14.00	3.75	17	12.09	4.07	13	12.08	4.95	16	13.82	4.72	15	11.91	3.98	19	15.24	5.37
min5	18	13.15	3.56	14	15.42	3.67	17	14.43	3.67	17	11.94	3.94	12	13.73	4.06	16	14.48	4.45	15	12.38	4.30	19	15.60	5.29

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A22

Numbers, Means, and Standard Deviations of Respiratory Rate Instability During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	29	2.57	1.46	19	2.46	0.90	17	2.88	1.19	24	2.73	1.42	16	2.75	1.29	20	2.80	0.85	20	2.66	1.53	15	2.74	0.90	15	3.57	1.60
min2	29	2.36	1.05	18	2.66	1.03	17	2.65	1.10	25	2.32	1.09	16	2.36	0.92	20	2.70	0.99	20	2.62	1.32	15	2.71	1.36	15	2.95	1.45
min3	29	2.26	1.03	18	2.41	0.78	17	2.71	1.18	25	2.37	1.08	17	2.91	1.02	20	2.52	1.12	20	2.41	1.01	15	2.88	1.36	15	2.63	1.05
min4	29	2.33	1.05	18	2.54	0.85	17	2.46	0.82	24	2.40	1.07	17	2.82	1.21	19	2.94	1.24	20	2.31	1.13	15	2.81	1.29	15	2.80	1.22
min5	29	2.31	1.12	19	2.31	1.16	17	2.76	0.63	25	2.66	1.22	16	2.68	1.01	20	2.47	1.00	19	2.20	0.93	15	2.78	1.04	14	2.54	0.78
R																											
min1	26	1.84	1.21	20	2.24	1.41	20	2.53	1.40	24	2.59	1.85	17	2.21	1.05	20	2.56	1.23	20	2.39	1.75	15	2.52	1.54	16	2.73	1.83
min2	27	1.69	0.86	20	1.92	1.04	18	2.44	0.94	24	2.64	1.77	17	2.10	1.25	20	2.34	1.14	20	2.08	1.09	15	2.65	1.78	16	2.70	1.69
min3	29	2.03	1.02	20	1.95	0.92	19	2.33	0.86	24	2.56	1.52	17	2.20	1.37	20	2.58	1.06	20	2.11	1.12	15	2.32	1.52	16	2.43	1.35
min4	28	1.60	0.86	18	1.61	0.78	19	2.54	0.75	24	2.49	1.34	17	2.07	1.21	20	2.28	1.06	20	2.20	1.20	15	2.20	1.18	16	2.34	1.28
min5	26	1.85	0.98	19	1.82	0.83	19	2.33	0.66	23	2.63	1.17	17	1.96	0.97	20	2.52	0.98	20	2.20	1.22	15	2.27	1.35	16	2.39	1.11

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	17	2.42	1.18	14	2.42	0.77	14	2.32	0.81	16	2.20	1.09	12	2.81	1.08	15	2.63	0.69	14	3.18	1.49	19	2.87	1.08
min2	18	1.99	0.97	14	2.43	1.15	15	2.45	0.94	16	2.14	0.95	11	2.76	0.68	16	3.02	0.94	13	2.73	1.58	19	2.63	0.85
min3	18	1.65	0.63	14	2.17	0.76	14	2.16	0.90	15	2.17	0.92	11	2.60	1.02	16	3.06	0.60	14	2.69	1.41	18	2.58	0.73
min4	17	1.89	0.94	14	2.22	0.84	14	2.17	0.95	15	1.95	0.67	11	2.38	0.79	17	2.77	0.97	13	2.19	1.00	19	2.62	1.00
min5	17	1.81	0.76	13	2.38	0.63	14	2.32	1.13	16	1.83	0.68	11	2.43	0.79	16	2.83	0.69	14	2.45	1.37	19	2.83	1.11
R																								
min1	17	2.37	1.16	14	2.15	0.94	16	1.85	0.80	17	1.86	1.57	13	2.16	1.29	16	2.67	1.28	15	2.41	1.80	19	2.81	1.51
min2	17	1.88	1.12	15	2.04	0.95	16	2.04	0.97	17	1.49	0.88	13	1.66	0.92	15	2.72	1.00	13	1.82	1.15	19	2.52	1.01
min3	17	1.41	0.76	15	1.97	1.16	16	2.14	0.84	17	1.80	1.02	13	1.81	1.12	16	2.51	0.80	15	2.13	1.20	19	2.58	0.92
min4	18	1.65	0.89	15	2.09	1.11	15	1.95	0.65	17	1.84	1.14	13	1.84	1.07	16	2.17	0.73	15	2.14	1.11	19	2.52	0.97
min5	17	1.71	0.85	14	1.93	0.86	16	2.22	0.77	17	1.83	1.18	13	1.91	0.99	17	2.59	0.81	15	2.00	1.03	18	2.40	0.95

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A23

Numbers, Means, and Standard Deviations of Tidal Volume During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	27	407.93	261.40	19	443.09	244.22	17	394.64	234.63	25	484.91	361.60	16	427.64	251.85	19	384.61	229.59	19	409.71	158.77	14	391.49	217.05	16	347.88	181.31
min2	27	367.60	217.62	19	425.28	224.07	17	382.95	240.82	25	445.99	328.00	16	390.48	293.08	20	361.50	232.37	19	365.16	157.88	14	372.13	182.15	16	342.55	180.50
min3	28	384.63	244.09	19	515.76	290.68	17	398.96	252.43	23	408.71	234.91	16	326.91	210.21	20	357.76	199.94	19	354.94	163.65	14	343.57	186.56	16	344.45	166.54
min4	28	390.92	234.85	18	400.75	191.83	17	346.14	211.01	23	377.16	229.58	16	331.45	228.91	20	353.84	199.74	19	376.40	172.63	15	384.18	215.09	16	338.10	169.80
min5	27	389.50	205.35	18	411.23	216.42	16	315.58	159.87	22	313.44	148.49	16	324.60	170.33	20	342.82	197.20	19	327.97	160.98	15	359.73	186.93	16	349.31	215.47
R																											
min1	27	577.11	378.49	19	542.46	363.61	19	508.48	373.42	24	577.81	338.65	16	553.70	405.93	19	486.69	328.74	19	529.59	270.64	15	648.21	313.38	17	508.51	361.19
min2	29	574.07	347.63	19	538.14	384.58	19	422.14	284.08	24	509.99	291.83	14	403.65	162.67	20	461.95	391.62	19	451.78	236.75	14	493.96	218.68	17	423.49	285.00
min3	28	523.74	293.03	19	492.17	294.02	19	414.44	278.97	24	450.70	263.49	15	444.30	327.31	20	421.23	264.95	19	444.96	238.56	14	489.37	241.55	17	425.64	238.89
min4	27	483.23	274.12	19	544.75	359.88	19	384.12	216.26	24	445.62	261.87	15	445.82	230.79	20	411.12	268.78	19	413.70	183.61	15	497.48	239.76	17	341.37	196.01
min5	25	468.91	251.63	18	480.06	337.44	19	365.22	210.76	23	476.36	289.88	16	475.32	333.75	20	390.43	282.20	19	400.24	179.91	14	462.00	278.80	17	358.66	237.69

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	18	654.05	529.99	14	359.10	167.62	15	350.15	192.04	17	518.39	213.12	10	499.86	315.36	17	385.04	204.34	15	458.16	258.48	18	473.76	232.24
min2	18	606.77	657.73	14	317.00	152.21	15	314.65	191.41	16	431.51	169.08	10	394.59	172.71	17	361.64	184.18	15	391.77	187.74	18	375.48	179.16
min3	18	637.91	717.66	14	329.47	153.50	15	319.00	155.43	17	467.47	193.45	11	403.65	182.19	17	336.72	164.39	14	348.33	179.69	19	429.89	237.33
min4	18	630.53	770.40	14	299.59	124.18	15	280.22	158.73	16	420.01	170.93	10	403.61	169.78	17	341.05	175.56	14	323.16	152.46	18	384.94	199.34
min5	18	585.65	584.65	14	309.04	128.74	15	296.07	186.43	16	431.05	159.71	12	424.91	198.69	17	311.29	143.81	14	330.19	186.47	17	362.03	171.20
R																								
min1	18	664.60	563.32	15	427.11	252.77	16	525.32	430.12	17	642.37	274.92	12	614.31	306.68	16	426.38	307.62	15	479.86	253.18	17	533.48	275.71
min2	18	627.44	501.91	15	405.23	234.41	16	390.67	267.03	17	550.19	245.05	12	559.12	286.51	17	373.55	224.32	15	425.02	223.81	18	437.55	217.95
min3	18	554.22	425.84	15	354.83	220.55	16	398.96	251.67	17	569.27	291.06	12	509.46	369.11	17	386.46	252.09	15	420.97	280.27	18	416.08	204.29
min4	18	617.76	453.48	15	404.81	346.32	16	380.54	256.51	16	490.13	226.21	11	408.79	201.44	17	370.05	226.14	15	406.70	257.92	18	415.12	205.47
min5	18	612.18	468.24	15	364.70	183.73	16	320.41	182.50	17	556.70	261.53	11	419.33	208.19	17	333.29	178.56	13	348.60	229.83	19	437.28	234.81

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A24

Numbers, Means, and Standard Deviations of Tidal Volume Instability During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
min1	27	48.56	30.98	19	43.95	30.64	17	48.64	39.45	26	61.55	53.42	16	50.01	31.42	19	45.95	34.56	18	52.80	34.56	15	57.22	52.95	15	46.69	34.31
min2	29	43.42	31.26	17	41.63	28.17	17	37.82	24.74	26	36.90	29.08	16	38.90	32.43	20	41.69	30.41	17	42.43	36.02	14	35.92	25.06	16	40.71	29.61
min3	29	38.35	37.68	18	62.91	51.28	17	38.28	24.65	24	54.22	48.25	16	30.60	28.99	19	42.37	38.95	20	48.14	44.52	14	38.91	29.76	16	46.72	42.25
min4	26	32.78	23.08	18	51.95	34.21	17	30.33	26.55	25	45.44	46.49	15	34.94	31.73	19	46.75	48.15	18	43.34	37.98	15	42.32	38.66	16	37.70	30.53
min5	27	39.93	28.66	19	41.53	30.08	17	33.12	27.15	25	39.38	30.40	16	43.67	35.71	19	38.74	31.28	18	34.48	29.44	14	38.32	29.95	16	35.26	30.99
R																											
min1	27	51.65	32.76	19	56.67	40.26	17	46.96	33.06	24	71.30	49.89	16	58.00	45.32	20	69.47	54.24	18	58.58	34.16	14	79.50	68.79	17	74.22	51.85
min2	29	44.04	28.22	18	35.78	25.56	17	29.93	21.36	24	45.09	38.58	16	51.05	49.27	20	52.25	45.60	19	44.08	30.99	13	39.80	32.79	16	31.15	19.90
min3	28	48.55	31.79	18	41.52	34.32	18	35.94	31.88	23	47.17	33.47	16	40.32	43.17	20	51.51	44.01	19	55.98	58.47	13	36.88	33.15	17	53.62	42.82
min4	28	39.17	27.90	19	53.83	41.23	19	38.93	28.35	24	44.52	34.78	17	46.50	34.86	19	34.49	29.44	18	57.03	48.10	15	45.99	31.42	17	35.89	19.43
min5	25	39.81	29.05	19	52.21	44.67	19	38.85	32.73	22	57.55	53.78	17	43.94	34.78	20	37.94	40.03	19	53.06	52.26	12	32.84	22.25	17	43.77	35.69

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
min1	18	108.97	117.11	14	65.30	71.00	15	67.81	60.17	16	61.90	38.92	10	55.58	37.37	17	45.49	27.00	13	46.78	29.85	18	57.51	37.07
min2	18	66.19	63.78	14	36.02	21.97	15	57.33	55.41	16	32.89	24.35	11	31.13	27.73	16	35.19	28.62	13	36.20	28.55	18	32.32	21.26
min3	18	60.22	57.34	14	40.35	33.86	15	47.59	42.79	15	39.60	36.44	12	35.22	29.45	16	32.40	32.71	14	34.82	25.10	18	51.78	40.95
min4	18	65.86	59.39	14	33.86	21.88	15	51.79	54.35	16	31.63	29.71	12	49.77	34.33	16	34.51	27.09	15	38.11	36.97	18	43.02	40.51
min5	18	74.17	51.16	14	43.36	52.14	15	49.93	45.92	16	32.32	30.93	12	40.31	32.21	17	37.12	39.22	14	28.90	21.25	18	55.85	46.54
R																								
min1	18	83.70	70.91	15	73.02	38.07	16	58.14	38.66	16	44.30	21.96	13	52.40	27.89	14	40.43	29.38	14	31.09	14.35	18	72.95	49.99
min2	18	71.93	80.40	15	48.84	30.59	16	44.37	37.69	17	35.17	23.09	13	46.97	26.60	16	33.01	23.82	14	27.25	19.60	18	38.67	27.66
min3	18	39.86	29.14	15	34.83	19.96	16	60.85	51.73	16	31.03	18.84	13	44.96	27.44	15	26.15	21.48	14	25.48	21.65	18	42.27	27.97
min4	18	68.85	72.41	15	45.59	49.19	16	62.27	50.05	15	32.24	23.77	13	36.62	24.33	16	28.64	21.33	13	28.85	22.98	18	31.77	18.05
min5	18	71.62	87.54	15	45.96	47.54	16	52.06	49.90	16	39.35	27.63	13	47.34	30.16	17	34.43	33.26	13	18.08	10.59	18	30.05	25.30

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation.

Table A25

Numbers, Means, and Standard Deviations of Skin Conductance During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5								
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
bsp min1	25	5.15	3.17	16	5.30	2.86	20	4.48	3.26	24	4.32	2.62	14	6.62	3.45	18	4.34	2.68	19	3.80	2.56	12	4.59	2.52	17	5.06	2.77
sp min1	25	5.39	3.17	16	5.63	3.09	19	4.36	2.12	24	4.52	2.72	14	6.70	3.44	18	4.72	2.39	19	4.03	2.58	13	5.15	3.09	17	5.39	2.56
sp min2	25	5.25	3.06	16	5.47	3.14	19	4.26	2.00	24	4.46	2.81	11	6.87	3.19	19	4.75	2.72	18	4.01	2.73	13	5.08	3.02	17	5.16	2.39
min1	24	4.61	2.51	16	4.94	2.86	19	3.93	1.89	24	4.20	2.71	13	5.49	2.87	18	3.83	1.97	18	3.39	1.77	13	5.10	3.59	18	4.58	2.34
min2	25	4.54	2.66	16	4.59	2.79	19	3.64	1.82	24	3.83	2.47	13	4.99	2.61	18	3.45	1.77	18	3.12	1.60	12	4.24	2.92	18	4.22	2.28
min3	25	4.25	2.42	16	4.31	2.69	20	3.67	2.26	24	3.67	2.38	13	4.65	2.44	18	3.12	1.60	18	2.96	1.44	12	3.95	2.71	18	3.75	2.08
min4	25	4.06	2.30	16	4.21	2.73	20	3.37	2.11	24	3.43	2.10	13	4.46	2.44	17	2.81	1.47	18	2.80	1.36	12	3.80	2.44	18	3.53	2.04
min5	25	3.81	2.10	15	3.68	2.17	20	3.21	2.08	24	3.26	1.96	12	3.86	1.97	17	2.65	1.37	18	2.64	1.23	12	3.69	2.20	18	3.25	1.93
R																											
bsp min1	25	4.81	2.95	16	5.79	3.53	19	4.47	2.84	24	4.18	2.53	15	6.30	3.14	18	4.58	2.87	18	3.43	2.21	13	5.26	3.80	17	5.57	3.12
sp min1	25	4.96	2.96	16	5.98	3.45	19	4.62	2.66	24	4.32	2.52	15	6.39	3.29	18	4.68	2.80	18	3.48	2.19	12	4.77	3.06	17	5.58	2.89
sp min2	24	4.84	3.01	15	5.33	2.88	18	4.56	2.50	24	4.12	2.44	14	6.11	3.40	18	4.85	2.77	18	3.32	2.03	12	4.64	3.06	16	5.28	2.81
min1	25	4.51	2.65	16	5.31	3.07	20	4.50	2.95	23	3.87	2.32	15	5.78	3.21	18	4.13	2.24	18	3.13	1.92	13	4.94	3.51	18	4.63	2.61
min2	25	4.24	2.50	16	4.79	2.73	19	3.67	2.07	23	3.55	2.13	15	5.41	3.06	18	3.68	2.10	18	2.89	1.77	13	4.72	3.32	18	4.14	2.40
min3	25	3.93	2.28	16	4.44	2.50	19	3.29	1.90	23	3.28	1.97	13	4.40	2.50	18	3.29	1.89	18	2.74	1.61	12	4.06	2.83	18	3.73	2.25
min4	25	3.70	2.14	16	4.28	2.49	20	3.37	2.35	23	3.08	1.85	13	4.13	2.33	18	3.02	1.72	18	2.62	1.52	13	4.22	2.93	18	3.52	2.27
min5	25	3.51	2.03	15	4.12	2.73	20	3.18	2.32	22	2.95	1.78	13	3.93	2.22	18	2.79	1.52	18	2.54	1.46	13	3.97	2.71	18	3.33	2.24

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
bsp min1	17	4.02	2.42	12	4.02	2.07	16	4.14	2.70	16	3.18	1.79	11	3.22	2.19	18	4.50	3.11	14	2.62	1.52	18	4.12	2.50
sp min1	17	4.15	2.62	13	4.88	2.69	16	4.46	2.79	16	3.23	1.66	11	3.51	2.46	18	5.08	3.03	14	3.00	1.83	18	4.72	2.63
sp min2	17	4.21	2.87	12	4.86	2.71	17	4.65	2.98	16	3.07	1.50	12	4.06	3.05	18	5.16	2.96	14	2.97	1.86	18	4.65	2.54
min1	17	3.85	2.58	12	4.34	2.57	16	4.42	2.60	16	2.89	1.37	11	3.29	2.27	18	4.75	2.85	14	2.83	1.67	18	4.29	2.36
min2	17	3.54	2.31	12	3.89	2.38	15	3.70	1.96	16	2.74	1.23	11	3.08	2.14	18	4.14	2.57	14	2.63	1.51	18	3.94	2.11
min3	17	3.31	2.10	12	3.54	2.19	15	3.36	1.76	16	2.65	1.15	11	2.89	2.03	18	3.76	2.45	14	2.52	1.56	18	3.63	1.94
min4	17	3.24	2.11	12	3.29	2.03	15	3.19	1.72	16	2.54	1.11	11	2.75	1.95	17	3.27	2.13	14	2.40	1.45	18	3.40	1.85
min5	16	2.82	1.64	12	3.08	1.87	15	3.10	1.64	16	2.45	1.05	11	2.64	1.88	17	3.09	2.02	14	2.28	1.39	17	3.00	1.63
R																								
bsp min1	16	4.12	2.71	12	4.15	2.38	16	4.17	2.43	16	3.15	1.62	11	3.34	2.33	18	5.06	3.16	14	2.74	1.64	17	4.37	2.54
sp min1	17	4.31	2.85	13	5.00	3.07	17	4.61	3.07	16	3.21	1.73	11	3.46	2.48	18	5.21	3.33	14	2.96	1.81	18	4.76	2.82
sp min2	17	4.14	2.75	13	4.84	3.02	17	4.35	2.90	16	3.04	1.59	11	3.38	2.49	18	5.12	3.22	14	2.89	1.81	17	4.31	2.63
min1	17	3.97	2.64	12	3.98	2.35	17	3.98	2.63	16	2.90	1.44	11	3.18	2.22	17	4.29	2.75	14	2.77	1.73	18	4.15	2.45
min2	17	3.63	2.37	12	3.62	2.11	17	3.65	2.40	16	2.64	1.31	11	2.99	2.08	17	3.87	2.68	14	2.52	1.55	18	3.79	2.24
min3	17	3.35	2.14	12	3.33	1.92	16	3.05	1.79	16	2.44	1.22	11	2.80	1.92	18	3.84	2.74	14	2.33	1.44	17	3.20	1.78
min4	17	3.11	1.92	12	3.13	1.76	16	2.91	1.66	16	2.32	1.16	11	2.66	1.77	18	3.57	2.56	14	2.19	1.34	17	2.98	1.72
min5	17	2.93	1.77	13	3.30	2.00	16	2.81	1.59	16	2.26	1.10	11	2.54	1.69	18	3.40	2.41	13	2.18	1.34	17	2.81	1.66

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; bsp = before speech; sp = speech.

Table A26

Numbers, Means, and Standard Deviations of Non-Specific Fluctuations During the Relaxation Test at Pre-Treatment, Session 2, 5, 10, Post-Treatment, and Follow-Up

	Pre-Treatment									Before Session 2									Before Session 5					
	AR			WLC			NAC			AR			WLC			NAC			AR			WLC			NAC	
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																											
bsp min1	25	5.80	2.84	18	6.50	3.49	20	6.65	4.18	24	5.13	3.13	15	6.47	2.33	20	5.90	3.57	19	5.68	2.89	14	6.50	2.82	15	5.93	2.58
sp min1	25	6.04	3.45	17	6.82	4.54	21	6.71	3.74	24	5.33	3.50	15	7.33	3.87	20	5.80	3.58	19	5.74	3.62	14	6.07	4.03	17	6.53	2.24
sp min2	25	5.16	3.21	17	4.82	3.88	19	3.95	2.74	24	4.88	3.42	14	3.71	3.38	20	3.30	3.13	18	5.00	3.51	13	4.92	3.62	17	5.59	3.50
min1	24	3.04	1.76	16	2.31	2.09	21	3.14	2.33	22	2.27	2.33	15	1.67	1.99	19	2.79	2.49	17	1.71	1.96	14	1.86	2.38	17	2.65	2.57
min2	24	1.79	1.61	16	1.44	2.13	20	1.10	1.37	22	1.05	1.40	14	1.14	1.79	19	1.47	2.04	18	1.61	1.82	13	1.54	1.85	17	1.82	2.38
min3	23	1.00	1.31	16	1.06	1.61	19	0.74	1.10	23	1.48	1.81	15	1.27	1.44	19	1.11	1.59	17	1.24	1.71	14	1.29	1.94	17	1.41	2.03
min4	23	0.91	1.31	17	1.47	1.97	21	1.10	1.84	21	1.10	1.51	14	1.79	2.15	20	0.95	1.19	19	1.79	2.53	12	0.92	1.38	17	0.94	1.68
min5	24	1.29	1.33	16	0.75	0.77	19	0.47	0.77	22	1.14	1.55	15	1.47	2.13	19	0.68	1.00	19	1.21	1.62	13	1.31	2.18	17	0.88	1.45
R																											
bsp min1	24	5.96	3.41	18	6.78	3.41	21	6.48	3.37	23	4.91	2.71	15	6.47	2.88	20	6.25	3.48	19	4.89	3.56	14	6.29	3.50	15	5.73	3.17
sp min1	25	6.00	3.18	16	7.25	3.82	21	6.05	3.61	24	4.71	3.00	15	5.40	3.31	18	4.94	3.19	19	4.95	3.82	13	5.00	3.37	17	5.18	3.84
sp min2	25	4.28	3.14	16	4.25	3.09	21	3.00	2.66	23	4.30	3.47	15	4.67	3.04	19	3.37	2.73	19	3.84	3.02	13	3.85	3.29	16	4.31	3.14
min1	24	2.54	1.61	16	2.19	1.97	20	2.05	1.70	21	1.52	1.78	15	1.47	1.55	19	2.47	1.98	19	1.68	2.24	12	1.08	2.02	17	2.35	2.64
min2	25	1.40	1.53	16	0.75	1.18	19	0.74	1.28	20	0.60	0.82	15	1.07	1.58	18	1.00	1.33	18	1.22	2.02	12	1.08	1.83	17	1.24	1.79
min3	24	1.00	1.25	16	0.75	1.18	19	0.63	1.16	22	0.91	1.41	15	0.73	0.88	19	1.05	1.58	17	0.76	1.25	12	0.75	1.29	17	1.71	2.49
min4	24	0.67	1.09	16	0.81	1.47	19	0.16	0.37	21	0.71	1.06	15	0.47	0.83	17	0.41	0.87	18	1.28	1.81	13	1.15	1.91	17	1.12	1.90
min5	24	0.71	1.16	15	0.80	1.15	19	0.47	0.84	21	0.86	1.24	15	0.93	1.22	18	0.78	1.17	17	1.47	2.03	14	0.86	1.17	17	1.06	1.95

(*continued*)

	Before Session 10									Post-Treatment									Follow-Up					
	AR			WLC			NAC			AR			WLC			NAC			AR			NAC		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
QS																								
bsp min1	17	4.12	3.04	12	5.92	3.63	17	5.59	3.32	16	5.19	4.10	13	4.54	3.15	18	5.61	3.27	14	4.50	2.53	17	4.88	2.29
sp min1	17	5.24	3.91	14	5.71	3.77	17	5.29	4.13	16	4.38	4.26	13	3.85	3.05	17	6.82	3.97	14	4.79	3.33	19	6.16	3.22
sp min2	17	4.94	3.34	13	5.31	3.99	17	4.06	3.63	15	3.60	3.72	13	3.92	3.80	17	6.00	3.84	14	4.00	3.14	18	4.83	3.49
min1	17	1.82	1.81	14	1.21	1.85	15	1.60	2.10	15	1.40	2.32	13	1.46	2.18	16	1.81	2.26	14	2.00	1.66	17	2.06	2.08
min2	17	1.29	1.40	12	0.08	0.29	15	0.93	1.10	15	1.27	2.31	13	1.00	1.87	17	1.18	1.81	14	1.21	1.53	16	1.00	1.46
min3	16	1.13	1.89	14	0.93	1.59	16	1.06	1.53	14	0.93	1.86	13	0.23	0.44	16	0.75	1.57	14	1.21	1.37	17	0.94	1.25
min4	16	1.19	1.56	14	0.71	1.33	17	1.41	2.09	14	0.71	1.64	12	0.08	0.29	16	0.81	1.68	14	1.07	1.49	18	1.33	1.75
min5	16	1.38	1.82	14	0.93	2.20	17	1.41	1.91	15	1.13	2.13	13	0.38	0.87	16	0.75	1.44	14	1.29	1.98	17	1.00	1.66
R																								
bsp min1	17	4.47	2.96	14	5.43	3.61	17	5.29	3.26	16	3.88	3.50	13	4.54	3.48	17	5.35	3.20	14	3.86	2.60	18	5.11	2.83
sp min1	16	4.56	3.33	13	5.31	3.90	17	4.41	3.47	16	3.63	4.11	13	3.62	3.93	18	5.00	3.88	14	4.71	3.95	19	4.95	3.64
sp min2	16	4.50	3.61	14	4.93	3.50	17	3.71	3.24	16	3.50	4.03	13	3.46	3.57	16	3.56	3.12	14	3.71	3.02	18	3.61	3.52
min1	17	2.00	2.09	14	1.50	1.74	14	0.64	0.84	15	1.33	1.35	13	0.85	1.57	16	1.13	1.45	14	1.71	1.68	17	2.12	2.34
min2	16	1.06	1.53	14	1.07	1.33	16	1.06	1.73	15	0.67	1.11	13	1.23	2.31	16	1.06	1.53	14	0.86	1.41	17	0.82	1.38
min3	17	1.12	1.69	13	0.62	1.19	15	1.00	1.41	15	0.53	1.13	13	0.69	1.03	16	0.81	1.28	14	0.71	0.99	18	0.67	1.24
min4	16	0.81	1.28	14	1.07	1.49	15	0.93	1.49	16	0.56	1.36	13	0.92	1.61	15	0.27	0.59	13	0.31	0.75	18	0.78	1.31
min5	16	0.56	0.81	13	0.62	1.19	16	1.31	1.78	16	1.31	2.12	13	0.77	1.36	16	0.63	1.71	13	0.46	1.39	18	0.83	1.25

Note. AR = Applied Relaxation; WLC = waiting list control; NAC = non-anxious control; QS = quiet sitting; R = relaxation; bsp = before speech; sp = speech.

Table A27

Numbers, Means, and Standard Deviations of the Therapeutic Quality Measures After Session 1, 4, 8, and 12 of Applied Relaxation Participants and Therapists

	After Session 1						After Session 4						After Session 8						After Session 12					
	AR			Therapists			AR			Therapists			AR			Therapists			AR			Therapists		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
RI																								
Congruence	25	9.43	9.04	25	15.44	4.72	21	12.83	8.13	22	16.90	4.87	19	12.96	10.02	19	17.15	5.24	19	15.85	7.57	19	17.23	6.34
Empathy	25	12.94	8.88	25	18.86	5.04	21	17.69	7.70	22	20.97	3.85	19	18.07	7.64	19	21.22	3.50	19	19.69	6.67	19	22.31	3.67
Level of regard	25	13.40	8.07	25	18.72	3.95	21	15.10	8.95	22	20.23	4.03	19	17.37	8.97	19	20.15	4.00	19	19.15	7.16	19	19.92	3.21
Unconditionality	25	7.20	8.15	25	20.50	3.87	21	10.52	7.74	22	20.57	5.96	19	13.15	7.78	19	21.93	5.70	19	13.27	7.70	19	21.85	6.64
WAI																								
Bonds	24	20.62	4.57	24	21.17	2.68	21	21.72	4.32	22	23.27	2.64	18	22.19	4.28	19	24.04	1.89	19	22.85	5.27	18	24.36	2.14
Goals	24	23.04	3.96	24	21.83	2.58	21	23.33	3.95	22	22.27	2.85	18	24.28	3.08	19	22.16	2.50	19	24.74	3.41	18	22.22	2.71
Tasks	24	22.32	4.44	24	20.80	3.00	21	22.59	4.34	22	21.97	3.09	18	23.62	2.84	19	21.67	3.27	19	24.58	2.96	18	22.80	2.77

Note. AR = Applied Relaxation; RI = Relationship Inventory; WAI = Working Alliance Inventory.

Table A28

Results of Independent Samples t-Tests (Generalized Anxiety Disorder, Non-Anxious Control) of the Psychometric Outcome Data at Pre-Treatment

	G		
	t	*df*	*p*
Primary measures	13.18	68.00	**0.00**
Self-rating of anxiety	11.47	68.00	**0.00**
Self-rating of worry	-8.76	68.00	**0.00**
Self-rating of relaxation	9.18	63.41	**0.00**
BAI	18.29	67.00	**0.00**
PSWQ	14.46	63.00	**0.00**
PSS	13.18	68.00	**0.00**
Secondary measures			
BDI	13.79	58.67	**0.00**
CSAI - cognitive subscale	15.42	65.35	**0.00**
CSAI - somatic subscale	11.44	67.73	**0.00**
RRA	12.25	64.93	**0.00**
WW-II – total	3.03	68.00	**0.00**

Note. G = group (Generalized Anxiety Disorder, non-anxious control); BAI = Beck Anxiety Inventory; PSWQ = Penn State Worry Questionnaire; PSS = Perceived Stress Scale; BDI = Beck Depression Inventory; CSAI = Cognitive and Somatic Anxiety Questionnaire; RRA = Reaction to Relaxation and Arousal Questionnaire; WW-II = Why Worry Scale.

Table A29

Results of Independent Samples t-Tests (Applied Relaxation, Waiting List Control) of the Psychometric Outcome Data at Pre-Treatment

	G		
	t	*df*	*p*
Primary measures	1.08	47.00	0.29
Self-rating of anxiety	0.88	47.00	0.38
Self-rating of worry	0.37	47.00	0.71
Self-rating of relaxation	1.62	38.13	0.11
BAI	0.63	46.00	0.53
PSWQ	0.96	44.00	0.34
PSS	1.08	47.00	0.29
Secondary measures			
BDI	0.90	47.00	0.37
CSAI - cognitive subscale	-0.03	47.00	0.98
CSAI - somatic subscale	0.57	47.00	0.57
RRA	0.23	47.00	0.82
WW-II – total	1.19	47.00	0.24

Note. G = group (Applied Relaxation, waiting list control); BAI = Beck Anxiety Inventory; PSWQ = Penn State Worry Questionnaire; PSS = Perceived Stress Scale; BDI = Beck Depression Inventory; CSAI = Cognitive and Somatic Anxiety Questionnaire; RRA = Reaction to Relaxation and Arousal Questionnaire; WW-II = Why Worry Scale.

Table A30

Results of the Mixed-Effects Models of the Completer Analysis of the Psychometric Outcome Data

	G				P				G x P		
	df		*F*	*p*	*df*	*F*	*p*	*df*		*F*	*p*
Primary measures											
Self-rating of anxiety	1	57.63	1.96	0.17	4	139.56	8.57	**0.00**	4	139.56	2.99	**0.02**
Self-rating of worry	1	54.66	3.09	0.08	4	137.03	6.81	**0.00**	4	137.03	2.58	**0.04**
Self-rating of relaxation	1	56.60	5.21	**0.03**	4	136.53	3.04	**0.02**	4	136.53	2.01	0.10
BAI	1	48.91	0.94	0.34	4	138.93	3.42	**0.01**	4	138.93	1.46	0.22
PSWQ	1	50.21	0.42	0.52	4	137.59	8.13	**0.00**	4	137.59	1.41	0.23
PSS	1	53.37	0.00	0.96	4	137.87	2.47	**0.05**	4	137.87	4.59	**0.00**
Secondary measures											
BDI	1	45.68	0.06	0.81	1	42.33	3.13	0.08	1	42.33	0.80	0.38
CSAI - cognitive subscale	1	48.77	0.45	0.50	1	32.83	9.72	**0.00**	1	32.83	1.36	0.25
CSAI - somatic subscale	1	47.51	0.11	0.75	1	30.42	11.46	**0.00**	1	30.42	0.30	0.59
RRA	1	48.36	1.43	0.24	1	31.73	19.85	**0.00**	1	31.73	7.67	**0.01**
WW-II – total	1	48.82	0.02	0.89	1	29.89	3.46	0.07	1	29.89	6.74	0.01

Note. G = group (Applied Relaxation, waiting list control); P = progress (pre-treatment, before session 2, 5, 10, post-treatment); BAI = Beck Anxiety Inventory; PSWQ = Penn State Worry Questionnaire; PSS = Perceived Stress Scale; BDI = Beck Depression Inventory; CSAI = Cognitive and Somatic Anxiety Questionnaire; RRA = Reaction to Relaxation and Arousal Questionnaire; WW-II = Why Worry Scale.

Table A31

Results of the Mixed-Effects Models of the Intention-To-Treat Analysis of the Psychometric Outcome Data

	G				P				G x P		
	df		*F*	*p*	*df*	*F*	*p*	*df*		*F*	*p*
Primary measures											
Self-rating of anxiety	1	58.70	0.01	0.91	4	177.45	6.52	**0.00**	4	177.45	1.19	0.32
Self-rating of worry	1	56.93	0.21	0.65	4	177.00	4.85	**0.00**	4	177.00	1.19	0.32
Self-rating of relaxation	1	59.49	0.58	0.45	4	175.02	3.32	**0.01**	4	175.02	1.03	0.39
BAI	1	51.27	1.54	0.22	4	186.65	2.44	**0.05**	4	186.65	1.14	0.34
PSWQ	1	51.27	0.03	0.87	4	181.88	6.79	**0.00**	4	181.88	0.78	0.54
PSS	1	54.33	0.49	0.49	4	171.46	2.22	0.07	4	171.46	4.05	**0.00**
Secondary measures											
BDI	1	48.28	0.47	0.49	1	47.86	2.35	0.13	1	47.86	0.25	0.62
CSAI - cognitive subscale	1	49.08	0.11	0.74	1	46.76	8.97	**0.00**	1	46.76	0.58	0.45
CSAI - somatic subscale	1	48.47	0.37	0.55	1	46.00	11.59	**0.00**	1	46.00	0.00	0.96
RRA	1	48.20	0.23	0.64	1	45.90	14.36	**0.00**	1	45.90	3.08	0.09
WW-II – total	1	48.66	0.34	0.56	1	45.21	2.59	0.11	1	45.21	4.96	0.03

Note. G = group (Applied Relaxation, waiting list control); P = progress (pre-treatment, before session 2, 5, 10, post-treatment); BAI = Beck Anxiety Inventory; PSWQ = Penn State Worry Questionnaire; PSS = Perceived Stress Scale; BDI = Beck Depression Inventory; CSAI = Cognitive and Somatic Anxiety Questionnaire; RRA = Reaction to Relaxation and Arousal Questionnaire; WW-II = Why Worry Scale.

Table A32
Results of the Mixed-Effects Models of the Completer Analysis of the Psychometric Outcome Data at Pre-Treatment, Before Session 2, 5, 10, Post-Treatment, and Follow-Up in the Applied Relaxation Group

			P	
	df		*F*	*p*
Primary measures				
Self-rating of anxiety	5	89.38	9.73	**0.00**
Self-rating of worry	5	86.54	6.94	**0.00**
Self-rating of relaxation	5	88.15	3.04	**0.01**
BAI	5	93.26	2.77	**0.02**
PSWQ	5	90.16	5.63	**0.00**
PSS	5	88.67	4.99	**0.00**
Secondary measures				
BDI	2	41.75	2.64	0.08
CSAI - cognitive subscale	2	34.59	6.58	**0.00**
CSAI - somatic subscale	2	32.03	6.02	**0.01**
RRA	2	36.30	12.03	**0.00**
WW-II – total	2	28.44	5.21	0.01

(*continued, post-treatment vs. follow-up analysis if main or interaction effects for Progress were significant*)

			P	
	df		*F*	*p*
Primary measures				
Self-rating of anxiety	1	16.89	4.87	**0.04**
Self-rating of worry	1	13.47	4.28	0.06
Self-rating of relaxation	1	15.04	0.00	0.95
BAI	1	13.10	1.78	0.21
PSWQ	1	13.23	3.22	0.10
PSS	1	13.92	0.00	0.96
Secondary measures				
BDI	-	-	-	-
CSAI - cognitive subscale	1	13.51	0.87	0.37
CSAI - somatic subscale	1	12.96	0.35	0.56
RRA	1	13.52	0.32	0.58
WW-II – total	-	-	-	-

Note. Dash indicates that analyses were not computed for that measure. P = progress (first analysis: pre-treatment, before session 2, 5, 10, post-treatment, follow-up; second analysis: post-treatment, follow-up).

Table A33
Results of the Mixed-Effects Models of the Intention-To-Treat Analysis of the Psychometric Outcome Data at Pre-Treatment, Before Session 2, 5, 10, Post-Treatment, and Follow-Up in the Applied Relaxation Group

			P	
	df		*F*	*p*
Primary measures				
Self-rating of anxiety	5	128.63	6.18	**0.00**
Self-rating of worry	5	128.19	5.14	**0.00**
Self-rating of relaxation	5	125.00	2.09	0.07
BAI	5	137.83	2.42	**0.04**
PSWQ	5	130.63	4.83	**0.00**
PSS	5	124.73	5.03	**0.00**
Secondary measures				
BDI	2	88.67	2.06	0.13
CSAI - cognitive subscale	2	86.30	7.96	**0.00**
CSAI - somatic subscale	2	84.80	6.48	**0.00**
RRA	2	87.79	10.60	**0.00**
WW-II – total	2	82.63	3.09	0.05

(*continued, post-treatment vs. follow-up analysis if main or interaction effects for Progress were significant*)

			P	
	df		*F*	*p*
Primary measures				
Self-rating of anxiety	1	28.51	4.71	**0.04**
Self-rating of worry	1	27.87	3.60	0.07
Self-rating of relaxation	-	-	-	-
BAI	1	27.89	1.14	0.29
PSWQ	1	27.16	2.95	0.10
PSS	1	27.94	0.03	0.86
Secondary measures				
BDI	-	-	-	-
CSAI - cognitive subscale	1	28.08	0.96	0.34
CSAI - somatic subscale	1	27.85	0.16	0.69
RRA	1	27.63	0.27	0.61
WW-II – total	-	-	-	-

Note. Dash indicates that analyses were not computed for that measure. P = progress (first analysis: pre-treatment, before session 2, 5, 10, post-treatment, follow-up; second analysis: post-treatment, follow-up).

Table A34

Effect Sizes for the Psychometric Outcome Measures (Pre- to Post-Treatment Comparison)

	Completer Analysis							Intention-To-Treat Analysis						
	AR			WLC				AR			WLC			
	n	Δ *M*	Δ *SD*	*n*	Δ *M*	Δ *SD*	SD_{pooled}	*d*	*n*	Δ *M*	Δ *SD*	*n*	Δ *M*	Δ *SD*	SD_{pooled}	*d*
Primary measures	17	3.35	1.62	15	1.53	2.50	2.08	0.88	28	2.50	2.08	20	1.30	2.36	2.20	0.54
Self-rating of anxiety	17	3.82	2.35	15	1.33	2.02	2.20	1.13	28	2.64	3.07	20	0.95	1.88	2.64	0.64
Self-rating of worry	17	-1.88	2.00	15	-0.33	2.64	2.32	-0.67	28	-1.32	2.16	20	-0.40	2.35	2.24	-0.41
Self-rating of relaxation	17	7.41	9.21	15	5.27	7.98	8.66	0.25	28	5.54	9.06	20	3.50	7.66	8.51	0.24
BAI	16	14.44	11.63	15	5.93	6.91	9.65	0.88	27	9.63	12.79	20	4.50	6.46	10.59	0.48
PSWQ	15	6.27	6.15	15	0.27	4.80	5.52	1.09	26	4.50	6.48	19	0.58	4.73	5.81	0.67
PSS	17	3.35	1.62	15	1.53	2.50	2.08	0.88	28	2.50	2.08	20	1.30	2.36	2.20	0.54
Secondary measures																
BDI	17	3.35	9.42	15	1.53	9.40	9.41	0.19	28	2.04	7.44	20	1.15	8.10	7.72	0.11
CSAI - cognitive subscale	17	4.00	6.07	13	2.00	4.16	5.34	0.37	28	2.43	5.08	18	1.44	3.62	4.57	0.22
CSAI - somatic subscale	17	2.82	4.03	13	2.69	4.55	4.26	0.03	28	1.71	3.41	18	1.94	4.02	3.66	-0.06
RRA	17	7.00	6.34	13	2.46	4.67	5.69	0.80	28	4.25	6.00	18	1.78	4.08	5.34	0.46
WW-II – total	16	8.81	12.62	13	-1.23	7.37	10.62	0.95	27	5.22	10.56	18	-0.89	6.22	9.09	0.67

Note. AR = Applied Relaxation; WLC = waiting list control; BAI = Beck Anxiety Inventory; PSWQ = Penn State Worry Questionnaire; PSS = Perceived Stress Scale; BDI = Beck Depression Inventory; CSAI = Cognitive and Somatic Anxiety Questionnaire; RRA = Reaction to Relaxation and Arousal Questionnaire; WW-II = Why Worry Scale.

Table A35

Results of the Mixed-Effects of the Psychometric Data of the Speech Segments of the Relaxation Test at Pre-Treatment (Generalized Anxiety Disorder, Non-Anxious Control)

	G				C				G x C		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Primary measures												
Anxiety	1	70.00	22.10	**0.00**	1	70.00	0.61	0.44	1	70.00	0.01	0.91
Worry	1	70.00	23.56	**0.00**	1	70.00	1.34	0.25	1	70.00	1.34	0.25
Relaxation	1	70.00	7.65	**0.01**	1	70.00	0.74	0.39	1	70.00	0.01	0.94
Secondary measures												
Boredom	1	70.00	0.01	0.91	1	70.00	1.40	0.24	1	70.00	0.53	0.47
Distress	1	70.00	16.62	**0.00**	1	70.00	0.12	0.73	1	70.00	0.12	0.73
Pleasantness	1	70.00	3.52	0.06	1	70.00	1.56	0.22	1	70.00	0.11	0.74
Sadness	1	70.00	10.00	**0.00**	1	70.00	1.22	0.27	1	70.00	1.22	0.27
Sleepiness	1	70.00	3.32	0.07	1	70.00	0.72	0.40	1	70.00	3.20	0.08

Note. G = group (Generalized Anxiety Disorder, non-anxious control); C = condition (quiet sitting, relaxation).

Table A36

Results of the Mixed-Effects Models of the Psychometric Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment (Generalized Anxiety Disorder, Non-Anxious Control)

	G				T				C				G x T				G x C				T x C				G x T x C		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Primary measures																												
Anxiety	1	74.28	26.91	**0.00**	2	312.63	2.19	0.11	1	375.42	0.46	0.50	2	312.63	0.24	0.79	1	375.42	0.27	0.60	2	283.88	0.05	0.95	2	283.88	0.30	0.74
Worry	1	73.76	24.95	**0.00**	2	312.53	0.79	0.46	1	371.94	0.00	0.96	2	312.53	0.79	0.46	1	371.94	0.00	0.96	2	284.04	0.44	0.64	2	284.04	0.44	0.64
Relaxation	1	75.60	13.82	**0.00**	2	309.79	3.15	**0.04**	1	374.80	0.09	0.76	2	309.79	2.16	0.12	1	374.80	0.91	0.34	2	282.65	0.51	0.60	2	282.65	0.11	0.90
Secondary measures																												
Boredom	1	74.25	1.99	0.16	2	312.88	5.21	**0.01**	1	372.26	0.02	0.90	2	312.88	1.28	0.28	1	372.26	0.72	0.40	2	284.42	2.31	0.10	2	284.42	0.41	0.66
Distress	1	74.97	12.01	**0.00**	2	311.09	0.59	0.55	1	375.90	0.89	0.35	2	311.09	0.58	0.56	1	375.90	0.21	0.64	2	282.98	0.00	1.00	2	282.98	0.00	1.00
Pleasantness	1	75.86	9.32	**0.00**	2	314.04	0.24	0.79	1	367.63	1.87	0.17	2	314.04	0.04	0.96	1	367.63	2.90	0.09	2	286.99	0.52	0.60	2	286.99	0.05	0.96
Sadness	1	73.07	10.50	**0.00**	2	314.37	0.07	0.93	1	368.07	2.32	0.13	2	314.37	0.07	0.93	1	368.07	2.32	0.13	2	286.80	0.12	0.89	2	286.80	0.12	0.89
Sleepiness	1	77.75	7.15	**0.01**	2	310.77	13.31	**0.00**	1	373.85	3.86	0.05	2	310.77	0.16	0.85	1	373.85	2.68	0.10	2	284.36	2.24	0.11	2	284.36	1.93	0.15

Note. G = group (Generalized Anxiety Disorder, non-anxious control); T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation).

Table A37

Results of the Mixed-Effects of the Psychometric Data of the Speech Segments of the Relaxation Test at Pre-Treatment (Applied Relaxation, Waiting List Control)

	G				C				G x C		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Primary measures												
Anxiety	1	49.00	3.31	0.08	1	49.00	0.69	0.41	1	49.00	2.58	0.11
Worry	1	49.00	1.43	0.24	1	49.00	3.12	0.08	1	49.00	0.02	0.88
Relaxation	1	49.00	0.02	0.89	1	49.00	0.87	0.36	1	49.00	0.06	0.81
Secondary measures												
Boredom	1	49.00	0.01	0.93	1	49.00	0.13	0.72	1	49.00	0.13	0.72
Distress	1	49.00	1.43	0.24	1	49.00	0.11	0.74	1	49.00	3.26	0.08
Pleasantness	1	49.00	0.45	0.51	1	49.00	2.12	0.15	1	49.00	0.09	0.77
Sadness	1	49.00	0.36	0.55	1	49.00	2.15	0.15	1	49.00	1.32	0.26
Sleepiness	1	49.00	0.34	0.56	1	49.00	0.91	0.35	1	49.00	0.67	0.42

Note. G = group (Applied Relaxation, waiting list control; C = condition (quiet sitting, relaxation).

Table A38

Results of the Mixed-Effects Models of the Psychometric Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment (Applied Relaxation, Waiting List Control)

	G				T				C				G x T				G x C				T x C				G x T x C		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Primary measures																												
Anxiety	1	50.96	3.99	0.05	2	213.32	2.06	0.13	1	256.09	0.57	0.45	2	213.32	3.37	**0.04**	1	256.09	1.23	0.27	2	193.93	0.41	0.66	2	193.93	1.42	0.24
Worry	1	51.81	5.81	**0.02**	2	212.75	2.64	0.07	1	255.27	0.02	0.89	2	212.75	3.60	**0.03**	1	255.27	1.41	0.24	2	193.68	0.92	0.40	2	193.68	0.54	0.58
Relaxation	1	55.87	1.68	0.20	2	208.41	1.45	0.24	1	249.48	0.44	0.51	2	208.41	2.07	0.13	1	249.48	0.04	0.85	2	194.52	0.78	0.46	2	194.52	0.63	0.53
Secondary measures																												
Boredom	1	51.74	1.66	0.20	2	213.04	5.32	**0.01**	1	254.46	0.87	0.35	2	213.04	0.86	0.43	1	254.46	0.07	0.79	2	194.03	0.63	0.54	2	194.03	0.51	0.60
Distress	1	53.13	5.02	0.03	2	211.96	1.91	0.15	1	257.59	0.18	0.67	2	211.96	1.56	0.21	1	257.59	0.03	0.86	2	193.65	0.07	0.94	2	193.65	1.01	0.37
Pleasantness	1	55.09	0.30	0.59	2	215.10	0.25	0.78	1	257.98	0.07	0.80	2	215.10	1.54	0.22	1	257.98	0.05	0.82	2	196.78	0.48	0.62	2	196.78	1.10	0.33
Sadness	1	51.65	1.19	0.28	2	214.97	0.28	0.75	1	252.34	4.07	0.04	2	214.97	1.41	0.25	1	252.34	1.78	0.18	2	196.64	0.14	0.87	2	196.64	0.37	0.69
Sleepiness	1	52.58	7.04	0.01	2	212.69	12.87	**0.00**	1	256.70	0.32	0.57	2	212.69	0.77	0.46	1	256.70	1.63	0.20	2	193.94	0.15	0.86	2	193.94	0.33	0.72

Note. G = group (Applied Relaxation, waiting list control); T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation).

Table A39

Results of the Mixed-Effects Models of the Completer Analysis of the Psychometric Data of the Speech Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, and Post-Treatment

	G			C			P			G x C			G x P			C x P			G x C x P		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Primary measures																					
Anxiety	1 64.51	0.19	0.66	1 334.21	2.80	0.09	4 293.92	1.26	0.29	1 334.21	0.01	0.92	4 293.92	2.30	0.06	4 320.78	0.34	0.85	4 320.78	0.98	0.42
Worry	1 66.81	2.04	0.16	1 331.72	6.29	**0.01**	4 294.15	1.10	0.36	1 331.72	0.38	0.54	4 294.15	1.18	0.32	4 323.36	0.72	0.58	4 323.36	0.31	0.87
Relaxation	1 63.07	0.02	0.90	1 337.59	0.61	0.44	4 294.90	0.90	0.47	1 337.59	0.03	0.86	4 294.90	2.64	**0.03**	4 320.09	1.46	0.22	4 320.09	0.77	0.54
Secondary measures																					
Boredom	1 73.84	0.44	0.51	1 297.36	3.06	0.08	4 282.98	1.87	0.12	1 297.36	0.43	0.51	4 282.98	0.32	0.86	4 321.33	0.94	0.44	4 321.33	0.78	0.54
Distress	1 71.91	1.79	0.18	1 314.49	3.03	0.08	4 289.69	0.41	0.80	1 314.49	4.45	0.04	4 289.69	0.40	0.81	4 322.34	0.15	0.96	4 322.34	0.96	0.43
Pleasantness	1 59.16	0.06	0.81	1 366.97	0.69	0.41	4 310.57	0.46	0.77	1 366.97	0.75	0.39	4 310.57	1.93	0.10	4 322.67	1.64	0.16	4 322.67	0.41	0.80
Sadness	1 76.70	0.01	0.92	1 306.12	0.03	0.87	4 289.22	2.90	0.02	1 306.12	0.13	0.72	4 289.22	0.17	0.96	4 324.34	0.58	0.68	4 324.34	0.48	0.75
Sleepiness	1 66.80	3.22	0.08	1 315.22	0.05	0.83	4 285.68	2.10	0.08	1 315.22	0.37	0.54	4 285.68	0.94	0.44	4 320.05	0.77	0.54	4 320.05	0.49	0.74

Note. G= group (Applied Relaxation, waiting list control); C = condition (quiet sitting, relaxation); P = progress (pre-treatment, before session 2, 5, 10, post-treatment).

Table A40

Results of the Mixed-Effects Models of the Completer Analysis of the Psychometric Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, and Post-Treatment

	G			T			C			P			G x T			G x C			G x P			T x C		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Primary measures																								
Anxiety	1 103.77	2.15	0.15	2 946.92	4.03	**0.02**	1 1100.25	4.43	**0.04**	4 296.80	1.18	0.32	2 946.92	0.79	0.46	1 1100.25	0.63	0.43	4 296.80	1.31	0.27	2 926.83	0.46	0.63
Worry	1 79.29	3.77	0.06	2 1030.56	3.37	**0.03**	1 1002.93	0.59	0.44	4 355.11	0.61	0.66	2 1030.56	0.06	0.94	1 1002.93	0.00	1.00	4 355.11	0.58	0.68	2 946.48	2.32	0.10
Relaxation	1 103.47	0.01	0.92	2 956.18	15.31	**0.00**	1 1098.51	2.99	0.08	4 302.96	0.50	0.74	2 956.18	0.60	0.55	1 1098.51	1.22	0.27	4 302.96	2.95	**0.02**	2 930.26	2.09	0.12
Secondary measures																								
Boredom	1 85.75	5.91	0.02	2 1012.31	20.36	**0.00**	1 1051.62	12.80	**0.00**	4 331.75	0.88	0.48	2 1012.31	3.14	0.04	1 1051.62	0.20	0.65	4 331.75	0.88	0.48	2 938.51	0.92	0.40
Distress	1 101.79	5.70	0.02	2 960.96	1.46	0.23	1 1096.83	0.71	0.40	4 304.24	0.63	0.64	2 960.96	1.98	0.14	1 1096.83	1.81	0.18	4 304.24	0.37	0.83	2 930.51	0.54	0.59
Pleasantness	1 84.00	0.07	0.79	2 1026.47	5.84	**0.00**	1 1026.94	2.26	0.13	4 352.15	1.48	0.21	2 1026.47	0.58	0.56	1 1026.94	1.31	0.25	4 352.15	2.39	0.05	2 947.19	1.10	0.33
Sadness	1 89.51	0.01	0.91	2 1018.39	0.82	0.44	1 1053.39	0.98	0.32	4 344.19	2.64	0.03	2 1018.39	3.18	0.04	1 1053.39	0.01	0.93	4 344.19	0.89	0.47	2 946.81	0.53	0.59
Sleepiness	1 88.20	17.26	**0.00**	2 998.25	76.33	**0.00**	1 1068.41	2.90	0.09	4 318.29	1.15	0.33	2 998.25	5.95	**0.00**	1 1068.41	0.05	0.83	4 318.29	0.61	0.66	2 933.36	1.15	0.32

(*continued*)

	T x P			C x P			G x T x C			G x T x P			G x C x P			T x C x P			G x T x C x P		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Primary measures																					
Anxiety	8 1002.14	0.59	0.79	4 889.89	0.65	0.63	2 926.83	1.12	0.33	8 1002.14	1.77	0.08	4 889.89	1.33	0.26	8 958.95	0.99	0.45	8 958.95	0.13	1.00
Worry	8 1020.59	0.63	0.75	4 977.18	0.41	0.81	2 946.48	0.26	0.77	8 1020.59	1.24	0.27	4 977.18	0.90	0.46	8 972.36	0.61	0.77	8 972.36	0.44	0.89
Relaxation	8 1004.49	1.92	0.05	4 898.41	1.42	0.23	2 930.26	0.34	0.71	8 1004.49	0.87	0.54	4 898.41	0.43	0.79	8 961.98	0.98	0.45	8 961.98	0.20	0.99
Secondary measures																					
Boredom	8 1012.10	0.71	0.69	4 949.04	0.97	0.42	2 938.51	0.11	0.90	8 1012.10	0.36	0.94	4 949.04	1.57	0.18	8 967.62	0.35	0.95	8 967.62	0.28	0.97
Distress	8 1004.75	0.50	0.86	4 902.06	1.45	0.21	2 930.51	0.85	0.43	8 1004.75	1.70	0.09	4 902.06	0.48	0.75	8 962.26	0.20	0.99	8 962.26	0.46	0.88
Pleasantness	8 1019.06	0.66	0.73	4 969.28	0.26	0.90	2 947.19	0.06	0.95	8 1019.06	0.78	0.62	4 969.28	0.21	0.93	8 973.87	0.23	0.99	8 973.87	0.52	0.84
Sadness	8 1017.39	1.17	0.32	4 956.88	0.52	0.72	2 946.81	0.26	0.77	8 1017.39	0.47	0.88	4 956.88	0.40	0.81	8 974.84	0.25	0.98	8 974.84	0.41	0.91
Sleepiness	8 1007.26	0.24	0.98	4 932.80	0.09	0.98	2 933.36	0.15	0.86	8 1007.26	0.19	0.99	4 932.80	0.95	0.43	8 964.04	0.15	1.00	8 964.04	0.28	0.97

Note. G= group (Applied Relaxation, waiting list control); T = time (at the beginning, during, at the end); C = condition (quiet sitting, relaxation); P = progress (pre-treatment, before session 2, 5, 10, post-treatment).

Table A41

Results of the Mixed-Effects Models of the Intention-To-Treat Analysis of the Psychometric Data of the Speech Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, and Post-Treatment.

	G				C				P				G x C				G x P				C x P				G x C x P		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Primary measures																												
Anxiety	1	70.36	0.39	0.54	1	430.96	0.49	0.48	4	353.03	1.18	0.32	1	430.96	0.55	0.46	4	353.03	2.36	0.05	4	405.83	0.48	0.75	4	405.83	1.43	0.22
Worry	1	73.65	2.67	0.11	1	424.55	11.81	**0.00**	4	351.95	0.88	0.48	1	424.55	0.02	0.88	4	351.95	0.79	0.53	4	408.48	0.47	0.75	4	408.48	0.13	0.97
Relaxation	1	66.26	0.63	0.43	1	445.48	3.05	0.08	4	358.95	0.67	0.62	1	445.48	4.81	**0.03**	4	358.95	1.55	0.19	4	404.75	1.48	0.21	4	404.75	0.70	0.59
Secondary measures																												
Boredom	1	85.32	0.32	0.57	1	369.85	7.98	**0.00**	4	334.83	1.48	0.21	1	369.85	0.61	0.44	4	334.83	0.28	0.89	4	406.03	0.52	0.72	4	406.03	0.85	0.50
Distress	1	77.11	2.11	0.15	1	415.48	3.80	0.05	4	350.64	0.35	0.85	1	415.48	2.85	0.09	4	350.64	0.37	0.83	4	408.39	0.33	0.85	4	408.39	1.18	0.32
Pleasantness	1	62.15	0.95	0.33	1	473.22	3.91	0.05	4	382.23	0.25	0.91	1	473.22	4.22	0.04	4	382.23	0.88	0.48	4	408.50	2.14	0.08	4	408.50	0.62	0.65
Sadness	1	80.61	0.04	0.85	1	413.24	0.54	0.46	4	352.43	2.09	0.08	1	413.24	0.54	0.46	4	352.43	0.26	0.90	4	411.02	0.28	0.89	4	411.02	0.38	0.82
Sleepiness	1	72.42	1.24	0.27	1	434.95	0.85	0.36	4	357.32	1.52	0.20	1	434.95	1.37	0.24	4	357.32	0.83	0.51	4	409.49	0.47	0.76	4	409.49	0.59	0.67

Note. G= group (Applied Relaxation, waiting list control); C = condition (quiet sitting, relaxation); P = progress (pre-treatment, before session 2, 5, 10, post-treatment).

Table A42

Results of the Mixed-Effects Models of the Intention-To-Treat Analysis of the Psychometric Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, and Post-Treatment.

	G				T				C				P				G x T				G x C				G x P				T x C		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Primary measures																															
Anxiety	1	123.19	4.33	**0.04**	2	1173.56	2.95	0.05	1	1352.05	8.41	**0.00**	4	358.07	0.74	0.56	2	1173.56	1.01	0.36	1	1352.05	0.28	0.60	4	358.07	0.90	0.47	2	1145.12	0.03	0.98
Worry	1	94.69	5.30	**0.02**	2	1261.30	4.96	**0.01**	1	1257.21	0.03	0.87	4	401.23	0.61	0.65	2	1261.30	1.22	0.30	1	1257.21	0.60	0.44	4	401.23	0.69	0.60	2	1162.24	1.76	0.17
Relaxation	1	109.56	1.17	0.28	2	1222.07	17.16	**0.00**	1	1325.96	0.62	0.43	4	376.48	0.16	0.96	2	1222.07	1.75	0.17	1	1325.96	0.11	0.74	4	376.48	1.23	0.30	2	1153.57	1.37	0.25
Secondary measures																															
Boredom	1	93.91	7.37	**0.01**	2	1269.95	27.21	**0.00**	1	1238.30	13.50	**0.00**	4	415.38	1.01	0.40	2	1269.95	4.30	0.01	1	1238.30	0.34	0.56	4	415.38	0.60	0.67	2	1168.99	1.04	0.35
Distress	1	122.07	7.51	**0.01**	2	1178.56	2.86	0.06	1	1350.59	0.83	0.36	4	359.97	0.71	0.59	2	1178.56	8.48	**0.00**	1	1350.59	2.15	0.14	4	359.97	0.49	0.74	2	1146.11	0.59	0.55
Pleasantness	1	91.33	1.60	0.21	2	1278.76	5.47	**0.00**	1	1204.96	0.00	0.98	4	432.45	1.07	0.37	2	1278.76	0.71	0.49	1	1204.96	0.30	0.59	4	432.45	1.31	0.27	2	1177.16	0.78	0.46
Sadness	1	110.80	0.03	0.87	2	1232.58	2.52	0.08	1	1320.92	0.57	0.45	4	388.65	1.91	0.11	2	1232.58	7.92	**0.00**	1	1320.92	0.29	0.59	4	388.65	1.02	0.40	2	1160.64	0.59	0.55
Sleepiness	1	99.07	13.78	**0.00**	2	1254.36	105.61	**0.00**	1	1279.59	0.78	0.38	4	396.91	0.83	0.51	2	1254.36	4.05	0.02	1	1279.59	0.62	0.43	4	396.91	0.58	0.68	2	1162.03	1.19	0.30

(*continued*)

	T x P				C x P				G x T x C				G x T x P				G x C x P				T x C x P				G x T x C x P		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Primary measures																											
Anxiety	8	1246.24	0.55	0.82	4	1078.85	0.48	0.75	2	1145.12	1.55	0.21	8	1246.24	1.79	0.08	4	1078.85	0.68	0.60	8	1184.63	0.64	0.74	8	1184.63	0.11	1.00
Worry	8	1267.76	0.58	0.80	4	1149.32	0.21	0.93	2	1162.24	0.41	0.67	8	1267.76	0.89	0.52	4	1149.32	0.51	0.73	8	1198.02	0.45	0.89	8	1198.02	0.22	0.99
Relaxation	8	1253.07	1.96	0.05	4	1114.11	0.84	0.50	2	1153.57	0.18	0.84	8	1253.07	0.73	0.67	4	1114.11	0.23	0.92	8	1192.74	0.74	0.66	8	1192.74	0.32	0.96
Secondary measures																											
Boredom	8	1274.24	0.46	0.88	4	1162.17	1.03	0.39	2	1168.99	0.08	0.92	8	1274.24	0.41	0.92	4	1162.17	1.17	0.32	8	1203.03	0.28	0.97	8	1203.03	0.20	0.99
Distress	8	1247.00	0.43	0.90	4	1082.66	1.23	0.30	2	1146.11	0.52	0.60	8	1247.00	0.91	0.51	4	1082.66	0.50	0.73	8	1185.68	0.16	1.00	8	1185.68	0.36	0.94
Pleasantness	8	1280.50	0.56	0.81	4	1178.19	0.04	1.00	2	1177.16	0.24	0.79	8	1280.50	0.69	0.70	4	1178.19	0.12	0.97	8	1208.94	0.25	0.98	8	1208.94	0.46	0.88
Sadness	8	1257.91	0.73	0.67	4	1125.58	0.51	0.73	2	1160.64	0.12	0.89	8	1257.91	0.26	0.98	4	1125.58	0.23	0.92	8	1198.60	0.16	1.00	8	1198.60	0.28	0.97
Sleepiness	8	1264.42	0.23	0.99	4	1142.02	0.04	1.00	2	1162.03	0.69	0.50	8	1264.42	0.16	1.00	4	1142.02	0.73	0.57	8	1198.54	0.08	1.00	8	1198.54	0.32	0.96

Note. G= group (Applied Relaxation, waiting list control); T = time (at the beginning, during, at the end); C = condition (quiet sitting, relaxation); P = progress (pre-treatment, before session 2, 5, 10, post-treatment).

Table A43

Results of the Mixed-Effects Models of the Completer Analysis of the Psychometric Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, Post-Treatment, and Follow-Up in the Applied Relaxation Group

	C			P				C x P		
	df	*F*	*p*	*df*	*F*	*p*		*df*	*F*	*p*
Primary measures										
Anxiety	1	222.40	0.02	0.88	5	186.66	2.80	**0.02**	5	211.60	1.82	0.11
Worry	1	186.85	1.39	0.24	5	175.11	1.10	0.36	5	208.48	0.45	0.81
Relaxation	1	232.61	0.17	0.68	5	194.04	1.62	0.16	5	212.61	0.62	0.68
Secondary measures												
Boredom	1	217.84	0.02	0.89	5	186.14	1.20	0.31	5	212.61	2.49	0.03
Distress	1	208.78	0.36	0.55	5	183.26	0.66	0.66	5	212.37	0.53	0.75
Pleasantness	1	239.87	0.16	0.69	5	197.55	1.05	0.39	5	213.31	0.51	0.77
Sadness	1	192.43	0.56	0.46	5	177.66	1.28	0.28	5	209.07	0.95	0.45
Sleepiness	1	194.66	0.52	0.47	5	173.18	1.11	0.36	5	206.45	0.37	0.87

(*continued, post-treatment vs. follow-up analysis if main or interaction effects for Progress were significant*)

	C			P				C x P		
	df	*F*	*p*	*df*	*F*	*p*		*df*	*F*	*p*
Primary measures										
Anxiety	1	48.48	3.84	0.06	1	60.54	6.51	**0.01**	1	40.36	3.45	0.07
Worry	-	-	-	-	-	-	-	-	-	-	-	-
Relaxation	-	-	-	-	-	-	-	-	-	-	-	-
Secondary measures												
Boredom	-	-	-	-	-	-	-	-	-	-	-	-
Distress	-	-	-	-	-	-	-	-	-	-	-	-
Pleasantness	-	-	-	-	-	-	-	-	-	-	-	-
Sadness	-	-	-	-	-	-	-	-	-	-	-	-
Sleepiness	-	-	-	-	-	-	-	-	-	-	-	-

Note. Dash indicates that analyses were not computed for that measure. T = time (at the beginning, during, at the end); C = condition (quiet sitting, relaxation); P = progress (first analysis: pre-treatment, before session 2, 5, 10, post-treatment, follow-up; second analysis: post-treatment, follow-up).

Table A44

Results of the Mixed-Effects Models of the Completer Analysis of the Psychometric Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, Post-Treatment, and Follow-Up in the Applied Relaxation Group

	T			C			P			T x C			T x P			C x P			T x C x P		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Primary measures																					
Anxiety	2	594.32	2.16	0.12	1	717.87	2.35	0.13	5	183.81	1.46	0.20	2	600.49	0.67	0.51	10	638.23	1.73	0.07	5	574.10	1.56	0.17	10	619.55	0.63	0.79
Worry	2	650.55	2.24	0.11	1	698.47	0.63	0.43	5	204.34	1.04	0.40	2	608.38	1.84	0.16	10	650.97	0.73	0.70	5	612.33	0.24	0.94	10	626.55	0.61	0.80
Relaxation	2	642.95	13.96	**0.00**	1	708.33	0.07	0.80	5	203.23	2.03	0.08	2	610.00	2.32	0.10	10	652.04	0.82	0.61	5	607.91	0.25	0.94	10	628.61	0.57	0.84
Secondary measures																												
Boredom	2	622.61	14.72	**0.00**	1	715.76	16.40	**0.00**	5	195.86	0.89	0.49	2	607.10	0.91	0.40	10	648.01	0.58	0.83	5	595.00	0.83	0.53	10	626.28	0.45	0.92
Distress	2	612.79	0.80	0.45	1	716.88	0.26	0.61	5	190.42	0.59	0.71	2	604.03	0.24	0.79	10	644.58	1.79	0.06	5	587.57	0.66	0.65	10	623.47	0.30	0.98
Pleasantness	2	674.83	6.30	**0.00**	1	657.84	0.30	0.58	5	234.81	1.40	0.23	2	622.57	0.78	0.46	10	660.29	0.66	0.76	5	639.54	0.29	0.92	10	636.96	0.33	0.97
Sadness	2	654.42	4.12	0.02	1	699.19	0.53	0.47	5	209.83	0.97	0.44	2	612.73	0.40	0.67	10	654.22	0.85	0.58	5	616.20	0.70	0.63	10	630.44	0.39	0.95
Sleepiness	2	636.00	43.56	**0.00**	1	711.19	1.00	0.32	5	198.32	0.69	0.63	2	607.45	0.31	0.73	10	649.96	0.45	0.92	5	602.55	0.71	0.62	10	626.57	0.27	0.99

(*continued, post-treatment vs. follow-up analysis if main or interaction effects for Progress were significant*)

	T			C			P			T x C			T x P			C x P			T x C x P		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Primary measures																					
Anxiety	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Worry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Relaxation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Secondary measures																					
Boredom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Distress	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pleasantness	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sadness	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sleepiness	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note. Dash indicates that analyses were not computed for that measure. T = time (at the beginning, during, at the end); C = condition (quiet sitting, relaxation); P = progress (first analysis: pre-treatment, before session 2, 5, 10, post-treatment, follow-up; second analysis: post-treatment, follow-up).

Table A45

Results of the Mixed-Effects Models of the Intention-To-Treat Analysis of the Psychometric Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, Post-Treatment, and Follow-Up in the Applied Relaxation Group

	C			P			C x P		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Primary measures									
Anxiety	1 325.77	0.03	0.86	5 242.33	2.31	**0.04**	5 292.79	1.64	0.15
Worry	1 267.93	6.31	**0.01**	5 222.25	0.89	0.49	5 291.12	0.35	0.88
Relaxation	1 339.38	0.20	0.65	5 260.16	1.10	0.36	5 295.67	0.43	0.83
Secondary measures									
Boredom	1 304.40	2.48	0.12	5 233.10	0.91	0.47	5 292.94	1.52	0.18
Distress	1 295.76	0.06	0.81	5 231.50	0.45	0.81	5 293.65	0.73	0.60
Pleasantness	1 344.23	0.14	0.71	5 268.26	0.49	0.78	5 296.61	0.62	0.69
Sadness	1 281.42	3.09	0.08	5 226.70	1.24	0.29	5 291.53	0.64	0.67
Sleepiness	1 308.97	3.92	0.05	5 236.77	0.86	0.51	5 294.39	0.22	0.95

(*continued, post-treatment vs. follow-up analysis if main or interaction effects for Progress were significant*)

	C			P			C x P		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Primary measures									
Anxiety	1 90.89	3.08	0.08	1 106.16	3.47	0.07	1 74.75	2.73	0.10
Worry	- -	-	-	- -	-	-	- -	-	-
Relaxation	- -	-	-	- -	-	-	- -	-	-
Secondary measures									
Boredom	- -	-	-	- -	-	-	- -	-	-
Distress	- -	-	-	- -	-	-	- -	-	-
Pleasantness	- -	-	-	- -	-	-	- -	-	-
Sadness	- -	-	-	- -	-	-	- -	-	-
Sleepiness	- -	-	-	- -	-	-	- -	-	-

Note. Dash indicates that analyses were not computed for that measure. T = time (at the beginning, during, at the end); C = condition (quiet sitting, relaxation); P = progress (first analysis: pre-treatment, before session 2, 5, 10, post-treatment, follow-up; second analysis: post-treatment, follow-up).

Table A46

Results of the Mixed-Effects Models of the Intention-To-Treat Analysis of the Psychometric Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, Post-Treatment, and Follow-Up in the Applied Relaxation Group.

	T			C			P			T x C			T x P			C x P			T x C x P		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Primary measures																					
Anxiety	2 791.49	1.42	0.24	1 974.00	5.59	**0.02**	5 232.13	0.85	0.51	2 816.21	0.94	0.39	10 865.62	1.52	0.13	5 740.49	0.75	0.59	10 848.02	0.41	0.94
Worry	2 865.25	6.38	**0.00**	1 959.34	0.30	0.58	5 244.43	0.86	0.51	2 822.77	2.30	0.10	10 884.78	0.39	0.95	5 779.88	0.21	0.96	10 850.97	0.30	0.98
Relaxation	2 893.77	16.49	**0.00**	1 939.81	0.04	0.84	5 263.17	0.78	0.57	2 835.29	1.46	0.23	10 891.57	0.60	0.82	5 797.30	0.22	0.96	10 861.02	0.38	0.96
Secondary measures																					
Boredom	2 831.03	23.95	**0.00**	1 972.63	19.67	**0.00**	5 243.03	0.65	0.66	2 823.68	0.86	0.42	10 880.67	0.30	0.98	5 768.52	0.60	0.70	10 851.70	0.35	0.97
Distress	2 812.17	9.32	**0.00**	1 973.73	0.45	0.50	5 237.45	0.47	0.80	2 819.95	0.07	0.93	10 879.29	0.87	0.56	5 755.97	0.46	0.81	10 848.70	0.16	1.00
Pleasantness	2 921.17	5.78	**0.00**	1 808.56	0.49	0.48	5 309.54	0.54	0.75	2 856.16	0.24	0.79	10 901.81	0.43	0.93	5 833.54	0.11	0.99	10 874.46	0.24	0.99
Sadness	2 852.84	12.51	**0.00**	1 968.37	0.69	0.41	5 247.14	0.87	0.50	2 826.14	0.45	0.63	10 884.98	0.35	0.97	5 778.94	0.61	0.69	10 854.05	0.22	0.99
Sleepiness	2 878.35	71.75	**0.00**	1 957.00	0.00	0.96	5 258.19	0.76	0.58	2 832.80	1.30	0.27	10 891.92	0.30	0.98	5 792.00	0.33	0.90	10 859.50	0.18	1.00

(*continued, post-treatment vs. follow-up analysis if main or interaction effects for Progress were significant*)

	T			C			P			T x C			T x P			C x P			T x C x P		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Primary measures																					
Anxiety	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-
Worry	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-
Relaxation	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-
Secondary measures																					
Boredom	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-
Distress	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-
Pleasantness	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-
Sadness	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-
Sleepiness	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-	- -	-	-

Note. Dash indicates that analyses were not computed for that measure. T = time (at the beginning, during, at the end); C = condition (quiet sitting, relaxation); P = progress (first analysis: pre-treatment, before session 2, 5, 10, post-treatment, follow-up; second analysis: post-treatment, follow-up).

Table A47

Results of the Mixed-Effects Models of the Physiological Data of the Speech Segments of the Relaxation Test at Pre-Treatment (Generalized Anxiety Disorder, Non-Anxious Control)

	G				T				C				G x T				G x C				T x C				G x T x C		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Control measures																												
ACCM	1	79.48	0.07	0.79	2	355.13	1.85	0.16	1	413.89	0.01	0.90	2	355.13	0.50	0.61	1	413.89	0.33	0.56	2	325.46	0.24	0.79	2	325.46	0.04	0.96
Secondary measures																												
HR	1	67.83	8.72	**0.00**	2	310.63	4.47	0.01	1	351.98	0.16	0.69	2	310.63	0.14	0.87	1	351.98	0.13	0.71	2	286.95	0.02	0.99	2	286.95	0.05	0.96
SCL	1	62.26	0.43	0.52	2	304.21	5.26	**0.01**	1	329.46	0.18	0.67	2	304.21	0.01	0.99	1	329.46	0.97	0.33	2	286.44	0.49	0.62	2	286.44	0.09	0.92
NSF	1	80.47	0.23	0.63	2	299.32	41.03	**0.00**	1	324.01	1.07	0.30	2	299.32	2.70	0.07	1	324.01	0.61	0.44	2	292.65	1.34	0.26	2	292.65	0.07	0.93

Note. G = group (Generalized Anxiety Disorder, non-anxious control); T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); ACCM = accelerometer; HR = heart rate; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A48

Results of the Mixed-Effects Models of the Physiological Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment (Generalized Anxiety Disorder, Non-Anxious Control)

	G				T				C				G x T				G x C				T x C				G x T x C		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Control measures																												
ACCM	1	83.58	0.39	0.54	4	593.17	0.16	0.96	1	492.36	0.19	0.67	4	593.17	0.06	0.99	1	492.36	0.09	0.76	4	593.60	0.43	0.79	4	593.60	0.41	0.80
Coherence	1	127.51	0.96	0.33	4	460.15	2.84	**0.02**	1	227.77	0.04	0.84	4	460.15	0.85	0.50	1	227.77	0.05	0.83	4	445.87	0.94	0.44	4	445.87	0.24	0.91
Primary measures																												
Lat. R. Gastric. EMG	1	74.57	3.85	0.05	4	595.14	0.39	0.81	1	654.85	0.26	0.61	4	595.14	0.56	0.69	1	654.85	0.43	0.51	4	575.57	0.67	0.61	4	575.57	0.96	0.43
Lat. L. Gastric. EMG	1	76.76	3.96	0.05	4	605.30	0.68	0.60	1	662.15	0.46	0.50	4	605.30	0.11	0.98	1	662.15	1.14	0.29	4	586.68	0.25	0.91	4	586.68	0.24	0.91
R. Forearm EMG	1	80.83	0.18	0.67	4	562.57	2.69	**0.03**	1	490.68	1.45	0.23	4	562.57	0.18	0.95	1	490.68	0.01	0.90	4	560.93	0.39	0.82	4	560.93	0.28	0.89
L. Forearm EMG	1	81.63	0.65	0.42	4	573.65	3.91	**0.00**	1	541.57	0.06	0.80	4	573.65	0.17	0.95	1	541.57	0.93	0.33	4	566.36	0.15	0.96	4	566.36	0.70	0.59
Up. Trap. EMG, ND	1	75.58	0.72	0.40	4	599.11	1.43	0.22	1	635.48	3.78	0.05	4	599.11	0.98	0.42	1	635.48	0.20	0.66	4	582.83	1.90	0.11	4	582.83	0.43	0.78
Lat. Front. EMG, ND	1	68.97	0.26	0.61	4	554.19	3.92	**0.00**	1	602.27	5.98	**0.01**	4	554.19	0.59	0.67	1	602.27	0.13	0.72	4	537.30	0.36	0.84	4	537.30	0.07	0.99
Secondary measures																												
HR	1	67.13	10.22	**0.00**	4	562.51	3.30	0.01	1	617.82	0.10	0.76	4	562.51	0.54	0.70	1	617.82	0.23	0.63	4	545.39	0.31	0.87	4	545.39	0.76	0.55
RSA_{TF}	1	75.45	0.16	0.69	4	469.88	0.35	0.85	1	357.71	0.01	0.90	4	469.88	0.79	0.54	1	357.71	0.09	0.76	4	470.13	1.69	0.15	4	470.13	0.57	0.69
end-tidal pCO_2	1	84.25	10.05	**0.00**	4	574.17	7.43	**0.00**	1	487.80	0.00	1.00	4	574.17	0.47	0.76	1	487.80	1.36	0.24	4	572.64	0.49	0.74	4	572.64	0.38	0.82
RR	1	85.28	1.08	0.30	4	565.55	3.40	**0.01**	1	497.14	5.09	0.02	4	565.55	0.34	0.85	1	497.14	4.21	0.04	4	564.39	0.89	0.47	4	564.39	1.65	0.16
RRI	1	94.32	7.50	**0.01**	4	516.54	0.99	0.41	1	285.19	7.55	**0.01**	4	516.54	0.27	0.90	1	285.19	1.13	0.29	4	510.90	0.34	0.85	4	510.90	3.85	**0.00**
TV	1	80.51	2.44	0.12	4	541.99	2.95	0.02	1	461.46	6.33	0.01	4	541.99	0.47	0.76	1	461.46	1.21	0.27	4	540.17	1.53	0.19	4	540.17	0.56	0.69
TVI	1	109.64	2.66	0.11	4	478.28	4.39	**0.00**	1	240.86	0.35	0.55	4	478.28	0.52	0.72	1	240.86	0.02	0.89	4	465.54	0.89	0.47	4	465.54	0.17	0.95
SCL	1	63.42	0.76	0.39	4	546.60	30.85	**0.00**	1	596.93	0.09	0.77	4	546.60	0.40	0.81	1	596.93	0.43	0.51	4	530.71	0.25	0.91	4	530.71	0.16	0.96
NSF	1	84.79	1.61	0.21	4	441.80	41.52	**0.00**	1	211.57	7.30	**0.01**	4	441.80	0.84	0.50	1	211.57	0.36	0.55	4	430.15	0.88	0.48	4	430.15	1.00	0.41

Note. G = group (Generalized Anxiety Disorder, non-anxious control); T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); ACCM = accelerometer; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A49

Results of the Mixed-Effects Models of the Physiological Data of the Speech Segments of the Relaxation Test at Pre-Treatment (Applied Relaxation, Waiting List Control)

	G			T			C			G x T			G x C			T x C			G x T x C		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Control measures																					
ACCM	1 55.91	1.59	0.21	2 248.58	0.60	0.55	1 289.86	0.28	0.60	2 248.58	0.26	0.77	1 289.86	0.56	0.46	2 228.24	0.34	0.71	2 228.24	0.04	0.96
Secondary measures																					
HR	1 46.59	0.08	0.78	2 213.65	4.06	0.02	1 243.46	0.61	0.44	2 213.65	1.36	0.26	1 243.46	0.26	0.61	2 196.81	0.22	0.80	2 196.81	1.16	0.32
SCL	1 42.54	0.40	0.53	2 208.22	4.29	0.01	1 223.71	0.00	0.96	2 208.22	0.10	0.90	1 223.71	4.39	0.04	2 197.18	0.19	0.83	2 197.18	0.03	0.97
NSF	1 54.79	0.84	0.36	2 203.64	22.19	**0.00**	1 222.03	0.02	0.88	2 203.64	2.47	0.09	1 222.03	0.08	0.78	2 197.53	1.31	0.27	2 197.53	0.14	0.87

Note. G = group (Applied Relaxation, waiting list control); T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); ACCM = accelerometer; HR = heart rate; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A50

Results of the Mixed-Effects Models of the Physiological Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment (Applied Relaxation, Waiting List Control)

	G			T			C			G x T			G x C			T x C			G x T x C		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Control measures																					
ACCM	1 63.19	0.01	0.92	4 410.12	0.19	0.94	1 294.82	0.02	0.88	4 410.12	0.15	0.96	1 294.82	7.10	**0.01**	4 412.08	0.25	0.91	4 412.08	0.81	0.52
Coherence	1 92.91	0.75	0.39	4 326.59	0.76	0.55	1 161.01	0.02	0.90	4 326.59	0.50	0.74	1 161.01	0.38	0.54	4 315.29	0.39	0.82	4 315.29	2.54	0.04
Primary measures																					
Lat. R. Gastric. EMG	1 52.42	1.79	0.19	4 409.36	1.07	0.37	1 444.13	0.74	0.39	4 409.36	0.24	0.92	1 444.13	0.35	0.55	4 397.16	1.18	0.32	4 397.16	0.45	0.77
Lat. L. Gastric. EMG	1 54.45	0.42	0.52	4 421.15	0.63	0.64	1 456.12	0.24	0.63	4 421.15	0.24	0.91	1 456.12	1.10	0.29	4 408.78	0.46	0.77	4 408.78	0.52	0.72
R. Forearm EMG	1 62.90	0.66	0.42	4 408.33	1.85	0.12	1 334.83	0.93	0.34	4 408.33	0.05	0.99	1 334.83	1.79	0.18	4 407.95	0.13	0.97	4 407.95	0.06	0.99
L. Forearm EMG	1 58.11	1.05	0.31	4 398.12	3.33	**0.01**	1 375.03	0.10	0.75	4 398.12	1.59	0.18	1 375.03	2.55	0.11	4 392.93	0.70	0.59	4 392.93	0.17	0.95
Up. Trap. EMG, ND	1 50.61	1.90	0.17	4 421.95	0.15	0.96	1 462.16	1.71	0.19	4 421.95	0.26	0.90	1 462.16	0.09	0.77	4 408.19	0.88	0.48	4 408.19	0.65	0.63
Lat. Front. EMG, ND	1 46.47	0.08	0.78	4 371.04	3.21	**0.01**	1 407.19	6.24	**0.01**	4 371.04	1.37	0.24	1 407.19	0.09	0.76	4 359.17	0.23	0.92	4 359.17	0.81	0.52
Secondary measures																					
HR	1 46.42	0.09	0.76	4 384.29	3.70	**0.01**	1 420.10	0.00	0.99	4 384.29	1.23	0.30	1 420.10	0.70	0.40	4 373.53	1.30	0.27	4 373.53	1.52	0.20
RSA_{TF}	1 55.86	0.02	0.89	4 346.28	0.67	0.61	1 236.48	0.24	0.62	4 346.28	0.36	0.84	1 236.48	1.90	0.17	4 347.37	0.82	0.51	4 347.37	1.93	0.10
end-tidal pCO_2	1 58.61	0.44	0.51	4 398.14	6.70	**0.00**	1 333.99	0.70	0.40	4 398.14	2.73	0.03	1 333.99	1.50	0.22	4 397.44	1.39	0.24	4 397.44	0.50	0.74
RR	1 59.39	0.10	0.75	4 414.10	2.81	0.03	1 374.39	15.02	**0.00**	4 414.10	1.77	0.13	1 374.39	0.53	0.47	4 411.77	0.30	0.88	4 411.77	1.40	0.23
RRI	1 66.29	0.13	0.72	4 376.30	1.41	0.23	1 215.84	12.31	**0.00**	4 376.30	0.49	0.74	1 215.84	0.05	0.83	4 373.11	2.28	0.06	4 373.11	0.59	0.67
TV	1 56.04	0.12	0.73	4 389.16	0.85	0.49	1 331.38	9.39	**0.00**	4 389.16	0.57	0.68	1 331.38	0.89	0.35	4 387.17	2.29	0.06	4 387.17	2.17	0.07
TVI	1 83.11	1.67	0.20	4 347.64	1.75	0.14	1 177.15	0.30	0.58	4 347.64	0.95	0.44	1 177.15	0.20	0.66	4 338.15	0.97	0.42	4 338.15	2.32	0.06
SCL	1 42.26	0.23	0.63	4 369.18	24.32	**0.00**	1 397.73	0.23	0.63	4 369.18	0.81	0.52	1 397.73	3.58	0.06	4 359.89	0.32	0.87	4 359.89	0.32	0.86
NSF	1 60.07	0.03	0.87	4 296.63	21.13	**0.00**	1 142.39	3.37	0.07	4 296.63	1.16	0.33	1 142.39	0.05	0.83	4 288.64	0.60	0.67	4 288.64	0.89	0.47

Note. G = group (Applied Relaxation, waiting list control); T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); ACCM = accelerometer; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A51

Results of the Mixed-Effects Models of the Completer Analysis of the Physiological Data of the Speech Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, and Post-Treatment

	G			T			C			P			G x T			G x C			G x P			T x C		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Control measures																								
ACCM	1	96.45	2.80	0.10	2	1054.97	7.37	**0.00**	1	1128.14	0.02	0.89	4	325.95	3.60	**0.01**	2	1054.97	1.60	0.20	1	1128.14	0.29	0.59	4	325.95	1.31	0.26	2	997.72	0.63	0.53
Secondary measures																								
HR	1	57.36	0.21	0.65	2	889.71	1.74	0.18	1	682.35	0.03	0.86	4	501.68	0.93	0.45	2	889.71	0.02	0.98	1	682.35	1.45	0.23	4	501.68	0.29	0.88	2	889.45	0.15	0.86
SCL	1	56.56	4.18	0.05	2	889.08	5.69	**0.00**	1	680.76	1.82	0.18	4	469.24	4.60	**0.00**	2	889.08	0.27	0.77	1	680.76	0.25	0.62	4	469.24	2.73	0.03	2	888.74	0.81	0.44
NSF	1	117.29	1.83	0.18	2	815.74	29.84	**0.00**	1	1026.79	7.28	**0.01**	4	259.66	2.33	0.06	2	815.74	5.21	**0.01**	1	1026.79	0.06	0.81	4	259.66	0.23	0.92	2	865.78	0.54	0.58

(*continued*)

	T x P			C x P			G x T x C			G x T x P			G x C x P			T x C x P			G x T x C x P		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Control measures																					
ACCM	8	1067.37	1.88	0.06	4	954.61	0.14	0.97	2	997.72	0.08	0.92	8	1067.37	2	0.04	4	954.61	0.44	0.78	8	1030.26	0.39	0.93	8	1030.26	0.25	0.98
Secondary measures																												
HR	8	936.39	0.54	0.83	4	978.63	0.97	0.43	2	889.45	0.48	0.62	8	936.39	0.77	0.63	4	978.63	0.71	0.58	8	897.88	0.22	0.99	8	897.88	0.31	0.96
SCL	8	939.12	0.20	0.99	4	972.81	0.62	0.65	2	888.74	0.08	0.92	8	939.12	0.20	0.99	4	972.81	0.73	0.57	8	897.56	0.16	1.00	8	897.56	0.05	1.00
NSF	8	908.62	3.17	**0.00**	4	760.89	0.45	0.77	2	865.78	0.07	0.93	8	908.62	1.17	0.32	4	760.89	0.10	0.98	8	889.37	1.18	0.31	8	889.37	0.77	0.63

Note. G = group (Applied Relaxation, waiting list control); T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); P = progress (pre-treatment, before session 2, 5, 10, post-treatment); ACCM = accelerometer; HR = heart rate; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A52

Results of the Mixed-Effects Models of the Completer Analysis of the Physiological Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, and Post-Treatment

	G				T				C				P				G x T				G x C				G x P				T x C		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Control measures																																
ACCM	1	153.05	3.05	0.08	4	1724.17	0.46	0.77	1	1628.91	0.13	0.72	4	310.50	1.48	0.21	4	1724.17	0.29	0.88	1	1628.91	0.17	0.68	4	310.50	2.25	0.06	4	1728.92	0.20	0.94
Coherence	1	317.90	0.16	0.69	4	1273.73	7.04	**0.00**	1	831.89	0.08	0.77	4	383.30	1.64	0.16	4	1273.73	0.53	0.71	1	831.89	0.19	0.67	4	383.30	0.42	0.80	4	1232.60	0.13	0.97
Primary measures																																
Lat. R. Gastric. EMG	1	86.00	0.03	0.87	4	1696.45	2.98	**0.02**	1	1305.72	4.18	**0.04**	4	348.46	0.97	0.42	4	1696.45	0.69	0.60	1	1305.72	0.09	0.76	4	348.46	0.78	0.54	4	1667.78	1.33	0.25
Lat. L. Gastric. EMG	1	83.97	0.22	0.64	4	1719.04	5.22	**0.00**	1	1235.93	0.02	0.89	4	386.40	0.38	0.82	4	1719.04	2.24	0.06	1	1235.93	3.75	0.05	4	386.40	2.78	**0.03**	4	1718.63	0.68	0.60
R. Forearm EMG	1	126.35	2.16	0.14	4	1671.15	12.71	**0.00**	1	1575.96	17.09	**0.00**	4	299.73	0.36	0.84	4	1671.15	1.64	0.16	1	1575.96	0.12	0.73	4	299.73	0.64	0.63	4	1655.65	0.40	0.81
L. Forearm EMG	1	93.41	0.83	0.36	4	1701.89	16.02	**0.00**	1	1413.19	29.11	**0.00**	4	332.31	0.90	0.47	4	1701.89	0.49	0.74	1	1413.19	5.78	**0.02**	4	332.31	0.25	0.91	4	1657.26	0.73	0.57
Up. Trap. EMG, ND	1	70.62	1.29	0.26	4	1625.89	0.75	0.56	1	987.30	1.50	0.22	4	434.38	1.48	0.21	4	1625.89	1.10	0.36	1	987.30	0.01	0.91	4	434.38	0.56	0.69	4	1730.38	0.47	0.76
Lat. Front. EMG, ND	1	80.43	0.04	0.83	4	1529.64	19.85	**0.00**	1	1169.82	41.21	**0.00**	4	344.23	3.26	**0.01**	4	1529.64	0.32	0.87	1	1169.82	0.01	0.91	4	344.23	0.53	0.71	4	1508.41	0.30	0.88
Secondary measures																																
HR	1	59.42	0.03	0.87	4	1334.37	5.02	**0.00**	1	715.92	2.79	0.10	4	643.97	1.66	0.16	4	1334.37	0.96	0.43	1	715.92	0.01	0.92	4	643.97	1.17	0.32	4	1601.74	0.26	0.90
RSA_{TF}	1	102.52	2.64	0.11	4	1186.89	0.41	0.80	1	1273.72	0.99	0.32	4	249.37	0.28	0.89	4	1186.89	0.90	0.46	1	1273.72	0.90	0.34	4	249.37	3.19	0.01	4	1187.24	2.23	0.06
end-tidal pCO_2	1	94.73	0.77	0.38	4	1703.86	49.70	**0.00**	1	1410.40	3.72	0.05	4	331.40	10.08	**0.00**	4	1703.86	1.17	0.32	1	1410.40	0.17	0.68	4	331.40	0.58	0.68	4	1662.53	0.94	0.44
RR	1	115.17	0.00	0.99	4	1673.33	45.47	**0.00**	1	1546.83	107.65	**0.00**	4	303.49	4.51	**0.00**	4	1673.33	0.91	0.46	1	1546.83	0.11	0.74	4	303.49	0.27	0.89	4	1644.50	1.47	0.21
RRI	1	175.05	1.82	0.18	4	1517.03	6.24	**0.00**	1	1421.38	35.26	**0.00**	4	291.76	3.21	0.01	4	1517.03	0.57	0.69	1	1421.38	3.08	0.08	4	291.76	0.69	0.60	4	1549.41	0.28	0.89
TV	1	106.86	0.59	0.44	4	1637.16	15.17	**0.00**	1	1485.20	36.54	**0.00**	4	309.34	0.66	0.62	4	1637.16	0.28	0.89	1	1485.20	0.39	0.53	4	309.34	3.38	**0.01**	4	1601.03	1.57	0.18
TVI	1	300.68	2.08	0.15	4	1328.46	18.97	**0.00**	1	908.13	1.48	0.22	4	372.07	3.32	0.01	4	1328.46	0.10	0.98	1	908.13	0.31	0.58	4	372.07	3.33	0.01	4	1296.22	0.98	0.42
SCL	1	55.57	4.48	0.04	4	1301.23	64.18	**0.00**	1	698.43	2.95	0.09	4	548.10	3.30	0.01	4	1301.23	0.35	0.85	1	698.43	1.46	0.23	4	548.10	4.19	**0.00**	4	1533.56	0.29	0.89
NSF	1	163.95	1.49	0.22	4	1300.11	29.15	**0.00**	1	1157.62	7.97	**0.00**	4	250.30	1.37	0.24	4	1300.11	1.62	0.17	1	1157.62	0.34	0.56	4	250.30	0.36	0.83	4	1330.67	0.17	0.96

(*continued*)

	T x P				C x P				G x T x C				G x T x P				G x C x P				T x C x P				G x T x C x P		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Control measures																											
ACCM	16	1703.39	0.46	0.97	4	893.51	0.44	0.78	4	1728.92	0.63	0.64	16	1703.39	0.19	1.00	4	893.51	4.02	**0.00**	16	1710.90	0.36	0.99	16	1710.90	0.52	0.94
Coherence	16	1324.64	1.13	0.32	4	599.10	0.04	1.00	4	1232.60	0.53	0.71	16	1324.64	0.38	0.99	4	599.10	0.53	0.71	16	1276.90	0.52	0.94	16	1276.90	1.65	0.05
Primary measures																											
Lat. R. Gastric. EMG	16	1635.37	0.35	0.99	4	1156.93	0.18	0.95	4	1667.78	0.26	0.91	16	1635.37	0.54	0.93	4	1156.93	0.46	0.77	16	1683.77	0.47	0.96	16	1683.77	0.28	1.00
Lat. L. Gastric. EMG	16	1684.29	0.51	0.94	4	1256.83	0.27	0.90	4	1718.63	0.35	0.84	16	1684.29	0.35	0.99	4	1256.83	0.68	0.61	16	1734.89	0.54	0.93	16	1734.89	0.43	0.98
R. Forearm EMG	16	1629.12	0.55	0.92	4	931.40	2.08	0.08	4	1655.65	0.69	0.60	16	1629.12	0.49	0.95	4	931.40	0.88	0.48	16	1652.61	0.37	0.99	16	1652.61	0.50	0.95
L. Forearm EMG	16	1626.65	0.85	0.63	4	1098.71	1.94	0.10	4	1657.26	0.34	0.85	16	1626.65	0.60	0.89	4	1098.71	0.65	0.63	16	1671.26	0.61	0.88	16	1671.26	0.62	0.87
Up. Trap. EMG, ND	16	1728.50	0.51	0.94	4	1402.64	0.24	0.92	4	1730.38	0.72	0.58	16	1728.50	0.21	1.00	4	1402.64	0.37	0.83	16	1745.41	0.40	0.98	16	1745.41	0.39	0.99
Lat. Front. EMG, ND	16	1480.64	0.25	1.00	4	1113.84	0.15	0.96	4	1508.41	0.07	0.99	16	1480.64	0.55	0.92	4	1113.84	0.18	0.95	16	1523.74	0.45	0.97	16	1523.74	0.31	1.00
Secondary measures																											
HR	16	1616.24	0.71	0.79	4	1597.53	0.82	0.51	4	1601.74	0.89	0.47	16	1616.24	0.78	0.70	4	1597.53	0.45	0.78	16	1607.89	0.74	0.76	16	1607.89	0.48	0.96
RSA_{TF}	16	1196.26	1.42	0.13	4	809.80	1.51	0.20	4	1187.24	0.26	0.91	16	1196.26	1.16	0.29	4	809.80	1.42	0.23	16	1192.46	0.42	0.98	16	1192.46	1.01	0.44
end-tidal pCO_2	16	1626.52	0.84	0.64	4	1088.74	0.65	0.63	4	1662.53	0.31	0.87	16	1626.52	1.02	0.43	4	1088.74	0.53	0.71	16	1675.55	0.57	0.91	16	1675.55	0.25	1.00
RR	16	1612.60	0.88	0.59	4	972.06	0.51	0.73	4	1644.50	0.50	0.74	16	1612.60	0.88	0.59	4	972.06	0.79	0.53	16	1650.09	0.97	0.49	16	1650.09	0.52	0.94
RRI	16	1553.21	0.88	0.59	4	753.31	0.67	0.61	4	1549.41	0.20	0.94	16	1553.21	0.71	0.79	4	753.31	0.59	0.67	16	1530.15	0.92	0.55	16	1530.15	0.46	0.97
TV	16	1572.38	0.57	0.91	4	1003.22	1.09	0.36	4	1601.03	0.53	0.71	16	1572.38	0.33	0.99	4	1003.22	0.42	0.80	16	1608.45	0.84	0.64	16	1608.45	0.63	0.86
TVI	16	1392.80	1.36	0.15	4	617.12	0.51	0.73	4	1296.22	0.50	0.73	16	1392.80	1.08	0.37	4	617.12	0.53	0.71	16	1340.17	0.80	0.69	16	1340.17	0.78	0.71
SCL	16	1544.57	0.42	0.98	4	1482.40	0.27	0.90	4	1533.56	0.11	0.98	16	1544.57	0.19	1.00	4	1482.40	0.35	0.84	16	1540.69	0.14	1.00	16	1540.69	0.21	1.00
NSF	16	1352.05	2.28	**0.00**	4	593.47	1.11	0.35	4	1330.67	0.17	0.95	16	1352.05	0.60	0.89	4	593.47	0.45	0.77	16	1320.21	0.74	0.76	16	1320.21	1.13	0.32

Note. G = group (Applied Relaxation, waiting list control); T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); P = progress (pre-treatment, before session 2, 5, 10, post-treatment); ACCM = accelerometer; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A53

Results of the Mixed-Effects Models of the Intention-To-Treat Analysis of the Physiological Data of the Speech Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, and Post-Treatment

	G			T			C			P			G x T			G x C			G x P			T x C		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Control measures																								
ACCM	1 105.96	5.88	0.02	2 1348.39	13.55	**0.00**	1 1353.39	1.60	0.21	4 406.28	2.53	0.04	2 1348.39	1.79	0.17	1 1353.39	3.13	0.08	4 406.28	0.88	0.48	2 1258.69	0.32	0.72
Secondary measures																								
HR	1 61.53	0.14	0.71	2 1057.30	3.41	0.03	1 784.64	1.22	0.27	4 648.18	1.06	0.38	2 1057.30	2.23	0.11	1 784.64	0.99	0.32	4 648.18	0.22	0.93	2 1101.23	0.82	0.44
SCL	1 58.60	4.74	0.03	2 1040.88	7.92	**0.00**	1 758.53	0.10	0.76	4 578.34	2.53	0.04	2 1040.88	1.21	0.30	1 758.53	2.47	0.12	4 578.34	2.18	0.07	2 1086.01	1.18	0.31
NSF	1 135.66	5.18	0.02	2 999.89	47.30	**0.00**	1 1243.71	3.51	0.06	4 305.61	0.79	0.53	2 999.89	8.24	**0.00**	1 1243.71	1.58	0.21	4 305.61	0.22	0.93	2 1055.40	1.49	0.23

(*continued*)

	T x P			C x P			G x T x C			G x T x P			G x C x P			T x C x P			G x T x C x P		
	df	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Control measures																					
ACCM	8 1347.70	1.48	0.16	4 1179.37	0.01	1.00	2 1258.69	0.48	0.62	8 1347.70	1.58	0.13	4 1179.37	0.06	0.99	8 1297.90	0.29	0.97	8 1297.90	0.26	0.98
Secondary measures																					
HR	8 1144.95	0.57	0.80	4 1182.19	0.60	0.66	2 1101.23	1.08	0.34	8 1144.95	0.62	0.76	4 1182.19	0.64	0.64	8 1109.30	0.16	1.00	8 1109.30	0.38	0.93
SCL	8 1131.33	0.14	1.00	4 1157.51	0.55	0.70	2 1086.01	0.01	0.99	8 1131.33	0.27	0.97	4 1157.51	0.45	0.77	8 1095.80	0.11	1.00	8 1095.80	0.04	1.00
NSF	8 1115.14	2.02	0.04	4 902.34	0.19	0.94	2 1055.40	0.56	0.57	8 1115.14	0.61	0.77	4 902.34	0.12	0.98	8 1081.02	0.88	0.53	8 1081.02	0.56	0.81

Note. G = group (Applied Relaxation, waiting list control); T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); P = progress (pre-treatment, before session 2, 5, 10, post-treatment); ACCM = accelerometer; HR = heart rate; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A54

Results of the Mixed-Effects Models of the Intention-To-Treat Analysis of the Physiological Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, and Post-Treatment

	G				T				C				P				G x T				G x C				G x P				T x C		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Control measures																																
ACCM	1	178.34	4.15	0.04	4	2148.69	0.58	0.67	1	1998.42	0.20	0.65	4	368.46	1.75	0.14	4	2148.69	0.96	0.43	1	1998.42	3.52	0.06	4	368.46	2.12	0.08	4	2150.66	0.78	0.54
Coherence	1	368.34	1.49	0.22	4	1542.66	3.13	0.01	1	1026.45	0.04	0.84	4	450.80	1.07	0.37	4	1542.66	0.48	0.75	1	1026.45	0.18	0.67	4	450.80	0.72	0.58	4	1495.71	0.48	0.75
Primary measures																																
Lat. R. Gastric. EMG	1	2292.00	1.58	0.21	4	2292.00	1.75	0.14	1	2292.00	1.42	0.23	4	2292.00	4.72	**0.00**	4	2292.00	0.33	0.86	1	2292.00	0.40	0.53	4	2292.00	4.67	**0.00**	4	2292.00	0.20	0.94
Lat. L. Gastric. EMG	1	90.71	0.20	0.65	4	2085.17	5.32	**0.00**	1	1367.20	0.04	0.83	4	478.73	0.05	0.99	4	2085.17	2.12	0.08	1	1367.20	5.46	**0.02**	4	478.73	2.09	0.08	4	2141.76	0.33	0.86
R. Forearm EMG	1	153.74	1.86	0.17	4	2086.93	15.10	**0.00**	1	1945.74	25.20	**0.00**	4	356.59	0.45	0.77	4	2086.93	0.88	0.48	1	1945.74	0.08	0.78	4	356.59	0.37	0.83	4	2070.40	0.63	0.64
L. Forearm EMG	1	114.76	1.98	0.16	4	2105.11	14.98	**0.00**	1	1775.89	20.36	**0.00**	4	377.88	0.46	0.76	4	2105.11	2.88	**0.02**	1	1775.89	4.23	**0.04**	4	377.88	0.10	0.98	4	2050.64	1.53	0.19
Up. Trap. EMG, ND	1	77.37	2.68	0.11	4	2000.62	1.26	0.28	1	1140.84	0.42	0.52	4	502.45	1.11	0.35	4	2000.62	1.28	0.28	1	1140.84	0.01	0.93	4	502.45	0.40	0.81	4	2168.64	2.27	0.06
Lat. Front. EMG, ND	1	88.68	0.33	0.57	4	1926.77	32.53	**0.00**	1	1357.31	35.22	**0.00**	4	421.26	2.01	0.09	4	1926.77	0.46	0.77	1	1357.31	0.51	0.48	4	421.26	0.48	0.75	4	1932.18	0.83	0.50
Secondary measures																																
HR	1	62.83	0.00	0.95	4	1577.59	10.06	**0.00**	1	814.05	0.28	0.60	4	819.68	1.61	0.17	4	1577.59	0.82	0.51	1	814.05	0.31	0.58	4	819.68	1.01	0.40	4	1959.87	0.24	0.91
RSA_{TF}	1	131.70	2.51	0.12	4	1420.87	3.08	0.02	1	1524.35	2.90	0.09	4	291.69	0.29	0.88	4	1420.87	4.66	**0.00**	1	1524.35	0.06	0.81	4	291.69	1.95	0.10	4	1437.08	2.32	0.06
end-tidal pCO_2	1	105.78	0.08	0.78	4	2135.80	62.99	**0.00**	1	1658.15	10.99	**0.00**	4	401.54	8.79	**0.00**	4	2135.80	4.49	**0.00**	1	1658.15	0.42	0.52	4	401.54	0.44	0.78	4	2095.81	3.05	0.02
RR	1	126.03	0.10	0.75	4	2120.93	40.39	**0.00**	1	1851.68	127.53	**0.00**	4	373.22	3.16	0.01	4	2120.93	0.66	0.62	1	1851.68	0.23	0.63	4	373.22	0.22	0.93	4	2073.46	1.61	0.17
RRI	1	221.72	0.49	0.48	4	1897.54	3.90	**0.00**	1	1731.51	50.61	**0.00**	4	360.15	2.12	0.08	4	1897.54	0.86	0.49	1	1731.51	5.78	0.02	4	360.15	0.29	0.89	4	1935.13	2.27	0.06
TV	1	122.20	0.00	0.96	4	2036.59	9.79	**0.00**	1	1793.43	66.02	**0.00**	4	365.85	0.35	0.84	4	2036.59	2.06	0.08	1	1793.43	1.09	0.30	4	365.85	1.99	0.10	4	1990.39	4.22	**0.00**
TVI	1	366.11	0.02	0.88	4	1675.17	11.17	**0.00**	1	1165.73	6.73	**0.01**	4	459.13	1.63	0.17	4	1675.17	0.35	0.84	1	1165.73	1.43	0.23	4	459.13	1.10	0.35	4	1636.88	3.11	0.01
SCL	1	61.47	6.71	0.01	4	1577.69	75.09	**0.00**	1	837.54	0.16	0.69	4	557.41	1.63	0.16	4	1577.69	1.42	0.23	1	837.54	5.58	0.02	4	557.41	2.62	0.03	4	1833.68	0.25	0.91
NSF	1	196.29	0.80	0.37	4	1585.30	31.59	**0.00**	1	1448.36	9.53	**0.00**	4	307.30	0.44	0.78	4	1585.30	4.20	**0.00**	1	1448.36	0.00	0.99	4	307.30	0.50	0.73	4	1625.02	1.15	0.33

(*continued*)

	T x P				C x P				G x T x C				G x T x P				G x C x P				T x C x P				G x T x C x P			
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Control measures																												
ACCM	16	2108.36	0.46	0.96	4	1070.42	0.47	0.76	4	2150.66	1.64	0.16	16	2108.36	0.25	1.00	4	1070.42	3.48	**0.01**	16	2121.60	0.40	0.98	16	2121.60	0.46	0.96
Coherence	16	1590.32	0.77	0.72	4	711.79	0.05	1.00	4	1495.71	0.81	0.52	16	1590.32	0.28	1.00	4	711.79	0.33	0.86	16	1548.33	0.33	0.99	16	1548.33	1.40	0.13
Primary measures																												
Lat. R. Gastric. EMG	16	2292.00	0.10	1.00	4	2292.00	0.10	0.98	4	2292.00	0.56	0.69	16	2292.00	0.15	1.00	4	2292.00	0.47	0.76	16	2292.00	0.25	1.00	16	2292.00	0.17	1.00
Lat. L. Gastric. EMG	16	2098.56	0.44	0.97	4	1549.56	0.18	0.95	4	2141.76	1.17	0.32	16	2098.56	0.28	1.00	4	1549.56	0.38	0.82	16	2162.13	0.43	0.97	16	2162.13	0.41	0.98
R. Forearm EMG	16	2033.06	0.46	0.97	4	1101.95	1.50	0.20	4	2070.40	1.38	0.24	16	2033.06	0.39	0.99	4	1101.95	1.02	0.40	16	2056.31	0.31	1.00	16	2056.31	0.44	0.97
L. Forearm EMG	16	2012.25	0.48	0.96	4	1259.36	1.03	0.39	4	2050.64	1.08	0.37	16	2012.25	0.25	1.00	4	1259.36	0.31	0.87	16	2062.64	0.36	0.99	16	2062.64	0.45	0.97
Up. Trap. EMG, ND	16	2115.72	0.36	0.99	4	1642.99	0.42	0.79	4	2168.64	2.63	**0.03**	16	2115.72	0.23	1.00	4	1642.99	0.33	0.86	16	2188.63	0.30	1.00	16	2188.63	0.31	1.00
Lat. Front. EMG, ND	16	1912.78	0.20	1.00	4	1375.90	0.08	0.99	4	1932.18	0.62	0.65	16	1912.78	0.45	0.97	4	1375.90	0.39	0.82	16	1949.88	0.34	0.99	16	1949.88	0.24	1.00
Secondary measures																												
HR	16	1964.73	0.49	0.95	4	1922.01	0.42	0.80	4	1959.87	1.68	0.15	16	1964.73	0.76	0.73	4	1922.01	0.24	0.91	16	1966.56	0.69	0.81	16	1966.56	0.43	0.97
RSA_{TF}	16	1447.15	0.72	0.78	4	906.96	0.77	0.54	4	1437.08	2.49	0.04	16	1447.15	0.88	0.59	4	906.96	0.86	0.49	16	1438.03	0.26	1.00	16	1438.03	0.79	0.70
end-tidal pCO_2	16	2051.83	0.64	0.85	4	1332.07	0.42	0.79	4	2095.81	1.52	0.19	16	2051.83	0.76	0.73	4	1332.07	0.60	0.66	16	2112.29	0.43	0.98	16	2112.29	0.11	1.00
RR	16	2027.04	0.54	0.93	4	1221.32	0.19	0.95	4	2073.46	0.53	0.71	16	2027.04	0.68	0.81	4	1221.32	0.52	0.72	16	2078.95	0.84	0.64	16	2078.95	0.41	0.98
RRI	16	1944.08	0.77	0.72	4	888.33	0.41	0.80	4	1935.13	0.24	0.92	16	1944.08	0.47	0.96	4	888.33	0.69	0.60	16	1909.23	0.62	0.87	16	1909.23	0.41	0.98
TV	16	1956.54	0.33	0.99	4	1200.43	0.66	0.62	4	1990.39	2.58	0.04	16	1956.54	0.33	0.99	4	1200.43	0.49	0.74	16	1996.96	0.57	0.91	16	1996.96	0.39	0.99
TVI	16	1738.84	0.94	0.52	4	761.41	0.31	0.87	4	1636.88	1.18	0.32	16	1738.84	0.72	0.78	4	761.41	0.38	0.82	16	1694.73	0.59	0.89	16	1694.73	0.70	0.80
SCL	16	1816.12	0.18	1.00	4	1617.80	0.19	0.94	4	1833.68	0.12	0.97	16	1816.12	0.16	1.00	4	1617.80	0.15	0.96	16	1844.70	0.07	1.00	16	1844.70	0.09	1.00
NSF	16	1640.41	1.83	0.02	4	731.06	0.63	0.64	4	1625.02	0.36	0.84	16	1640.41	0.69	0.81	4	731.06	0.11	0.98	16	1607.69	0.47	0.96	16	1607.69	0.78	0.71

Note. G = group (Applied Relaxation, waiting list control); T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); P = progress (pre-treatment, before session 2, 5, 10, post-treatment); ACCM = accelerometer; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A55

Results of the Mixed-Effects Models of the Completer Analysis of the Physiological Data of the Speech Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, Post-Treatment, and Follow-Up in the Applied Relaxation Group

	T				C				P				T x C				T x P				C x P				T x C x P		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Control measures																												
ACCM	2	704.76	2.13	0.12	1	711.34	0.00	0.95	5	229.04	1.14	0.34	2	657.84	0.03	0.97	10	692.03	0.41	0.94	5	645.73	0.19	0.97	10	674.44	0.31	0.98
Secondary measures																												
HR	2	607.13	1.08	0.34	1	478.19	1.31	0.25	5	269.65	0.86	0.51	2	589.78	0.17	0.84	10	623.31	0.25	0.99	5	639.07	0.71	0.62	10	597.57	0.23	0.99
SCL	2	625.99	3.15	0.04	1	493.77	2.05	0.15	5	252.93	3.77	**0.00**	2	606.18	0.39	0.68	10	635.41	0.16	1.00	5	631.05	0.25	0.94	10	615.25	0.10	1.00
NSF	2	559.11	9.48	**0.00**	1	682.59	6.61	0.01	5	172.29	0.76	0.58	2	580.42	0.16	0.85	10	605.76	1.08	0.37	5	528.54	0.25	0.94	10	595.46	0.42	0.94

(*continued, post-treatment vs. follow-up analysis if main or interaction effects for Progress were significant*)

	T				C				P				T x C				T x P				C x P				T x C x P		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Control measures																												
ACCM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Secondary measures																												
HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCL	2	163.16	1.92	0.15	1	158.55	0.00	0.97	1	118.84	0.83	0.36	2	150.85	0.08	0.92	2	160.59	1.09	0.34	1	179.68	0.06	0.81	2	153.05	0.09	0.92
NSF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note. Dash indicates that analyses were not computed for that measure. T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); P = progress (first analysis: pre-treatment, before session 2, 5, 10, post-treatment, follow-up; second analysis: post-treatment, follow-up); ACCM = accelerometer; HR = heart rate; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A56

Results of the Mixed-Effects Models of the Completer Analysis of the Physiological Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, Post-Treatment, and Follow-Up in the Applied Relaxation Group

	T				C				P				T x C				T x P				C x P				T x C x P		
	df	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*
Control measures																											
ACCM	4	1085.54	0.57	0.69	1	1053.50	1.53	0.22	5	189.12	1.21	0.31	4	1098.99	0.63	0.64	20	1086.57	0.55	0.95	5	558.90	2.07	0.07	20	1085.01	0.42	0.99
Coherence	4	845.42	4.80	**0.00**	1	564.15	0.03	0.87	5	246.41	0.91	0.47	4	819.57	0.74	0.56	20	883.56	0.90	0.59	5	400.64	0.15	0.98	20	851.11	1.37	0.13
Primary measures																											
Lat. R. Gastric. EMG	4	1109.62	0.63	0.64	1	877.21	3.34	0.07	5	226.83	1.61	0.16	4	1088.32	1.47	0.21	20	1059.24	0.31	1.00	5	777.48	0.49	0.79	20	1098.80	0.39	0.99
Lat. L. Gastric. EMG	4	1125.21	0.81	0.52	1	858.94	2.08	0.15	5	239.02	2.19	0.06	4	1112.62	0.48	0.75	20	1080.66	0.32	1.00	5	803.04	0.26	0.93	20	1122.82	0.50	0.97
R. Forearm EMG	4	1064.31	4.97	**0.00**	1	1031.15	5.90	**0.02**	5	193.60	1.19	0.32	4	1050.23	0.24	0.92	20	1041.99	0.59	0.92	5	647.04	0.75	0.58	20	1052.55	0.35	1.00
L. Forearm EMG	4	1103.07	11.24	**0.00**	1	911.41	34.03	**0.00**	5	218.14	0.70	0.63	4	1074.37	1.09	0.36	20	1047.69	0.96	0.51	5	744.54	1.00	0.42	20	1084.33	0.57	0.93
Up. Trap. EMG, ND	4	1097.69	0.71	0.58	1	741.97	1.49	0.22	5	262.32	0.98	0.43	4	1122.23	0.11	0.98	20	1096.14	0.48	0.97	5	873.18	0.26	0.93	20	1131.75	0.35	1.00
Lat. Front. EMG, ND	4	961.56	8.09	**0.00**	1	716.56	32.38	**0.00**	5	242.79	2.52	**0.03**	4	959.48	0.06	0.99	20	943.06	0.51	0.96	5	767.76	0.21	0.96	20	966.79	0.36	1.00
Secondary measures																											
HR	4	890.49	1.22	0.30	1	471.39	2.29	0.13	5	360.04	1.86	0.10	4	1054.35	0.31	0.87	20	1057.18	0.66	0.87	5	999.76	1.04	0.39	20	1058.90	0.55	0.95
RSA_{TF}	4	797.00	0.64	0.63	1	873.39	2.54	0.11	5	169.38	1.37	0.24	4	794.02	1.40	0.23	20	805.86	0.96	0.51	5	579.20	1.77	0.12	20	799.25	0.86	0.64
end-tidal pCO_2	4	1096.48	30.82	**0.00**	1	922.41	3.61	0.06	5	207.27	5.20	**0.00**	4	1067.40	0.46	0.77	20	1036.42	1.13	0.31	5	714.04	0.65	0.66	20	1076.55	0.44	0.98
RR	4	1084.27	30.29	**0.00**	1	1068.92	69.06	**0.00**	5	186.70	2.26	0.05	4	1079.63	1.08	0.37	20	1063.24	0.60	0.91	5	612.35	0.66	0.65	20	1077.96	0.84	0.66
RRI	4	1007.75	8.52	**0.00**	1	1005.36	17.18	**0.00**	5	184.56	2.67	0.02	4	1031.87	0.23	0.92	20	1032.08	1.00	0.46	5	530.82	0.86	0.51	20	1020.55	0.73	0.79
TV	4	1097.73	11.46	**0.00**	1	1028.86	17.01	**0.00**	5	199.11	2.64	0.02	4	1074.25	0.66	0.62	20	1049.51	0.37	1.00	5	671.08	0.96	0.44	20	1078.63	0.49	0.97
TVI	4	888.60	10.90	**0.00**	1	643.16	0.02	0.88	5	238.76	7.03	**0.00**	4	874.40	0.84	0.50	20	946.13	1.36	0.13	5	422.33	1.16	0.33	20	901.54	0.82	0.69
SCL	4	961.61	42.28	**0.00**	1	552.09	6.26	0.01	5	261.21	4.54	**0.00**	4	1050.82	0.16	0.96	20	1027.37	0.30	1.00	5	841.74	0.29	0.92	20	1058.29	0.06	1.00
NSF	4	841.26	26.13	**0.00**	1	730.86	9.09	**0.00**	5	170.72	0.49	0.78	4	859.17	0.18	0.95	20	889.58	1.61	0.04	5	393.83	0.19	0.97	20	855.08	0.53	0.96

(*continued, post-treatment vs. follow-up analysis if main or interaction effects for Progress were significant*)

	T				C				P				T x C				T x P				C x P				T x C x P		
	df	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*
Control measures																											
ACCM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coherence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Primary measures																											
Lat. R. Gastric. EMG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lat. L. Gastric. EMG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R. Forearm EMG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. Forearm EMG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Up. Trap. EMG, ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lat. Front. EMG, ND	4	202.06	3.20	**0.01**	1	163.26	14.80	**0.00**	1	104.31	0.00	0.98	4	204.07	0.16	0.96	4	208.50	1.03	0.39	1	222.38	0.00	0.98	4	205.65	0.04	1.00
Secondary measures																											
HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RSA_{TF}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
end-tidal pCO_2	4	260.40	11.95	**0.00**	1	185.44	0.85	0.36	1	110.62	1.83	0.18	4	270.32	0.78	0.54	4	273.66	0.61	0.66	1	272.31	0.02	0.88	4	272.72	0.12	0.98
RR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RRI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI	4	212.16	4.89	**0.00**	1	123.21	3.62	0.06	1	71.01	3.23	0.08	4	205.14	0.78	0.54	4	215.57	1.22	0.30	1	94.03	1.28	0.26	4	211.28	0.41	0.80
SCL	4	260.12	7.32	**0.00**	1	190.98	0.86	0.36	1	126.46	0.40	0.53	4	269.66	0.25	0.91	4	273.97	0.01	1.00	1	281.50	0.05	0.82	4	271.60	0.02	1.00
NSF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note. Dash indicates that analyses were not computed for that measure. T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); P = progress (first analysis: pre-treatment, before session 2, 5, 10, post-treatment, follow-up; second analysis: post-treatment, follow-up); ACCM = accelerometer; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A57

Results of the Mixed-Effects Models of the Intention-To-Treat Analysis of the Physiological Data of the Speech Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, Post-Treatment, and Follow-Up in the Applied Relaxation Group

	T				C				P				T x C				T x P				C x P				T x C x P		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Control measures																												
ACCM	2	964.66	8.58	**0.00**	1	954.72	0.58	0.45	5	276.89	1.60	0.16	2	898.71	1.21	0.30	10	936.95	0.60	0.82	5	826.22	0.06	1.00	10	924.31	0.23	0.99
Secondary measures																												
HR	2	766.05	2.05	0.13	1	527.21	0.03	0.87	5	459.79	0.89	0.49	2	849.03	0.11	0.90	10	884.86	0.18	1.00	5	885.44	0.32	0.90	10	854.32	0.37	0.96
SCL	2	745.87	4.04	0.02	1	519.22	2.75	0.10	5	338.05	2.83	0.02	2	783.35	0.88	0.42	10	809.17	0.13	1.00	5	790.96	0.28	0.92	10	792.31	0.08	1.00
NSF	2	706.71	14.45	**0.00**	1	870.68	8.29	**0.00**	5	207.00	0.41	0.84	2	741.82	0.91	0.40	10	774.65	0.81	0.62	5	646.98	0.20	0.96	10	766.93	0.31	0.98

(*continued, post-treatment vs. follow-up analysis if main or interaction effects for Progress were significant*)

	T				C				P				T x C				T x P				C x P				T x C x P		
	df		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*	*df*		*F*	*p*
Control measures																												
ACCM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Secondary measures																												
HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NSF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note. Dash indicates that analyses were not computed for that measure. T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); P = progress (first analysis: pre-treatment, before session 2, 5, 10, post-treatment, follow-up; second analysis: post-treatment, follow-up); ACCM = accelerometer; HR = heart rate; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A58

Results of the Mixed-Effects Models of the Intention-to-Treat Analysis of the Physiological Data of the Quiet Sitting and Relaxation Segments of the Relaxation Test at Pre-Treatment, Before Session 2, 5, 10, Post-Treatment, and Follow-Up in the Applied Relaxation Group

	T				C				P				T x C				T x P				C x P				T x C x P		
	df	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*
Control measures																											
ACCM	4	1483.25	0.73	0.57	1	1442.29	6.18	0.01	5	240.61	1.37	0.24	4	1500.38	2.07	0.08	20	1475.03	0.52	0.96	5	727.85	1.85	0.10	20	1478.73	0.47	0.98
Coherence	4	1164.30	5.80	**0.00**	1	864.00	0.01	0.91	5	296.03	0.55	0.74	4	1152.92	0.73	0.57	20	1212.17	0.70	0.83	5	532.33	0.09	0.99	20	1180.63	1.17	0.27
Primary measures																											
Lat. R. Gastric. EMG	4	1455.27	1.83	0.12	1	950.93	1.45	0.23	5	319.33	1.26	0.28	4	1494.34	2.57	**0.04**	20	1464.01	0.29	1.00	5	1067.14	0.38	0.86	20	1508.08	0.33	1.00
Lat. L. Gastric. EMG	4	1495.16	1.12	0.35	1	1030.84	2.77	0.10	5	313.53	1.25	0.29	4	1510.88	1.75	0.14	20	1465.97	0.22	1.00	5	1048.91	0.13	0.99	20	1525.26	0.34	1.00
R. Forearm EMG	4	1453.86	9.09	**0.00**	1	1418.11	14.89	**0.00**	5	239.04	0.77	0.57	4	1445.26	1.06	0.37	20	1418.97	0.52	0.96	5	799.47	0.40	0.85	20	1440.07	0.28	1.00
L. Forearm EMG	4	1480.46	14.40	**0.00**	1	1274.51	27.54	**0.00**	5	262.19	0.23	0.95	4	1438.02	2.50	**0.04**	20	1400.12	0.40	0.99	5	914.44	0.24	0.95	20	1450.03	0.35	1.00
Up. Trap. EMG, ND	4	1437.59	1.16	0.33	1	827.66	0.75	0.39	5	338.16	0.61	0.70	4	1549.80	0.21	0.93	20	1518.91	0.43	0.99	5	1122.35	0.47	0.80	20	1563.44	0.32	1.00
Lat. Front. EMG, ND	4	1325.04	29.85	**0.00**	1	864.52	39.69	**0.00**	5	324.53	1.37	0.23	4	1368.59	0.21	0.93	20	1340.20	0.30	1.00	5	1038.84	0.15	0.98	20	1379.72	0.23	1.00
Secondary measures																											
HR	4	1148.99	8.90	**0.00**	1	551.82	0.00	0.98	5	531.99	1.53	0.18	4	1465.91	1.56	0.18	20	1459.26	0.48	0.97	5	1367.37	0.50	0.78	20	1470.93	0.46	0.98
RSA_{TF}	4	1084.21	1.46	0.21	1	1164.51	4.73	0.03	5	214.17	0.87	0.50	4	1076.45	4.90	**0.00**	20	1083.65	0.63	0.89	5	739.76	1.38	0.23	20	1085.21	0.66	0.86
end-tidal pCO_2	4	1489.30	44.33	**0.00**	1	1105.47	11.88	**0.00**	5	280.59	4.61	**0.00**	4	1472.07	1.55	0.18	20	1422.73	0.91	0.58	5	957.25	0.49	0.79	20	1486.29	0.30	1.00
RR	4	1502.76	36.55	**0.00**	1	1432.66	85.90	**0.00**	5	244.38	1.68	0.14	4	1481.29	1.71	0.15	20	1444.02	0.53	0.95	5	833.88	0.30	0.92	20	1479.60	0.52	0.96
RRI	4	1360.05	3.74	**0.00**	1	1322.97	17.40	**0.00**	5	247.64	1.61	0.16	4	1398.81	1.52	0.19	20	1394.40	0.64	0.89	5	656.66	0.50	0.78	20	1381.78	0.47	0.98
TV	4	1479.40	15.39	**0.00**	1	1345.52	35.23	**0.00**	5	247.53	1.63	0.15	4	1445.67	3.58	**0.01**	20	1405.95	0.27	1.00	5	856.11	0.73	0.60	20	1451.35	0.42	0.99
TVI	4	1231.46	9.61	**0.00**	1	963.23	0.68	0.41	5	303.91	2.65	0.02	4	1231.10	2.01	0.09	20	1283.28	1.30	0.17	5	566.77	0.35	0.88	20	1255.95	0.75	0.77
SCL	4	1189.33	61.70	**0.00**	1	649.16	8.07	**0.00**	5	288.53	3.82	**0.00**	4	1317.45	0.11	0.98	20	1293.45	0.30	1.00	5	962.97	0.38	0.87	20	1328.36	0.04	1.00
NSF	4	1079.38	27.38	**0.00**	1	994.92	6.71	**0.01**	5	216.05	0.45	0.81	4	1109.26	0.40	0.81	20	1121.51	1.39	0.12	5	505.48	0.15	0.98	20	1106.33	0.43	0.99

(*continued, post-treatment vs. follow-up analysis if main or interaction effects for Progress were significant*)

	T				C				P				T x C				T x P				C x P				T x C x P		
	df	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*		*df*	*F*	*p*
Control measures																											
ACCM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coherence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Primary measures																											
Lat. R. Gastric. EMG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lat. L. Gastric. EMG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R. Forearm EMG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. Forearm EMG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Up. Trap. EMG, ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lat. Front. EMG, ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Secondary measures																											
HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RSA_{TF}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
end-tidal pCO_2	4	461.18	15.16	**0.00**	1	337.64	4.32	0.04	1	232.48	0.32	0.57	4	478.52	0.62	0.65	4	486.97	0.29	0.88	1	512.17	0.11	0.74	4	482.17	0.08	0.99
RR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RRI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCL	4	404.03	13.50	**0.00**	1	290.95	1.11	0.29	1	202.34	0.33	0.56	4	422.96	0.18	0.95	4	430.11	0.00	1.00	1	450.87	0.00	0.97	4	426.08	0.01	1.00
NSF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note. Dash indicates that analyses were not computed for that measure. T = time (min 1 before speech, speech min 1, 2); C = condition (quiet sitting, relaxation); P = progress (first analysis: pre-treatment, before session 2, 5, 10, post-treatment, follow-up; second analysis: post-treatment, follow-up); ACCM = accelerometer; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A59

Results of the Mixed-Effects Models of the Completer Analysis on the Therapeutic Quality Data in Applied Relaxation Patients and Therapists

	P			
	df		*F*	*p*
AR				
RI				
Congruence	3	59.26	2.92	**0.04**
Empathy	3	60.74	3.05	**0.04**
Level of regard	3	61.24	2.43	0.07
Unconditionality	3	58.43	2.63	0.06
WAI				
Bonds	3	56.77	1.13	0.34
Goals	3	55.79	1.06	0.37
Tasks	3	51.62	1.83	0.15
Therapists				
RI				
Congruence	3	59.56	1.25	0.30
Empathy	3	56.04	4.17	**0.01**
Level of regard	3	60.00	1.49	0.23
Unconditionality	3	65.30	0.94	0.42
WAI				
Bonds	3	55.41	8.78	**0.00**
Goals	3	57.07	0.13	0.94
Tasks	3	58.35	1.72	0.17

Note. P = progress (after session 1, 4, 8, 12); AR = Applied Relaxation; RI = Relationship Inventory; WAI = Working Alliance Inventory.

Table A60

Results of the Mixed-Effects Models of the Intention-To-Treat Analysis on the Therapeutic Quality Data in Applied Relaxation Patients and Therapists

	P			
	df		*F*	*p*
AR				
RI				
Congruence	3	78.15	2.41	0.07
Empathy	3	77.64	2.50	0.07
Level of regard	3	78.52	1.91	0.13
Unconditionality	3	75.13	2.89	**0.04**
WAI				
Bonds	3	74.63	0.96	0.42
Goals	3	75.10	0.46	0.71
Tasks	3	73.94	1.17	0.33
Therapists				
RI				
Congruence	3	74.73	0.61	0.61
Empathy	3	75.22	2.29	0.09
Level of regard	3	77.54	0.79	0.50
Unconditionality	3	76.60	0.82	0.48
WAI				
Bonds	3	76.06	6.38	**0.00**
Goals	3	74.77	0.23	0.88
Tasks	3	74.94	1.19	0.32

Note. P = progress (after session 1, 4, 8, 12); AR = Applied Relaxation; RI = Relationship Inventory; WAI = Working Alliance Inventory.

Table A61

Bivariate Correlations of the Psychometric and Physiological Measures (Intercepts) During Relaxation at Pre-Treatment in the Generalized Anxiety Disorder Group

		Anxiety (Q)	Relaxation (Q)	Worry (Q)	Anxiety (P)	Relaxation (P)	Worry (P)
lat. r. gastroc. EMG	r_s	0.01	0.06	-0.17	-0.23	0.10	-0.20
	p	0.95	0.71	0.26	0.16	0.53	0.24
	n	47	47	47	38	38	38
lat. l. gastroc. EMG	r_s	0.07	-0.04	0.02	-0.01	0.23	0.00
	p	0.62	0.78	0.89	0.97	0.16	0.98
	n	49	49	49	40	40	40
r. forearm EMG	r_s	-0.12	-0.18	-0.22	0.04	-0.30	0.02
	p	0.40	0.22	0.14	0.79	0.06	0.91
	n	49	49	49	40	40	40
l. forearm EMG	r_s	-0.01	-0.13	-0.09	0.06	-0.32	-0.03
	p	0.94	0.36	0.53	0.73	**0.04**	0.87
	n	48	48	48	40	40	40
up. trap. EMG, ND	r_s	-0.06	0.13	-0.07	-0.25	0.23	-0.16
	p	0.67	0.39	0.64	0.12	0.16	0.32
	n	47	47	47	39	39	39
lat. front. EMG, ND	r_s	-0.15	0.08	-0.07	0.12	0.14	-0.05
	p	0.35	0.63	0.66	0.50	0.44	0.78
	n	43	43	43	34	34	34
HR	r_s	0.04	-0.11	0.03	0.15	0.15	0.16
	p	0.80	0.50	0.84	0.39	0.38	0.37
	n	42	42	42	35	35	35
RSA_{TF}	r_s	0.19	-0.11	0.21	-0.02	-0.17	-0.03
	p	0.23	0.50	0.18	0.93	0.32	0.88
	n	42	42	42	35	35	35
end-tidal pCO_2	r_s	-0.07	-0.09	0.07	-0.08	0.17	0.05
	p	0.65	0.52	0.61	0.64	0.29	0.75
	n	48	48	48	39	39	39
RR	r_s	0.18	0.03	0.06	0.00	0.17	-0.10
	p	0.22	0.82	0.68	1.00	0.29	0.55
	n	49	49	49	40	40	40
RRI	r_s	0.10	-0.08	-0.03	0.21	-0.06	0.22
	p	0.50	0.58	0.86	0.20	0.71	0.19
	n	48	48	48	39	39	39
TV	r_s	-0.50	0.01	-0.45	-0.04	-0.12	-0.05
	p	**0.00**	0.93	**0.00**	0.83	0.47	0.76
	n	47	47	47	39	39	39
TVI	r_s	-0.26	0.09	-0.22	0.23	-0.18	0.18
	p	0.07	0.55	0.13	0.15	0.26	0.27
	n	49	49	49	40	40	40
SCL	r_s	0.01	0.39	-0.05	0.20	0.22	0.02
	p	0.94	0.01	0.75	0.25	0.20	0.92
	n	41	41	41	34	34	34
NSF	r_s	-0.32	0.26	-0.33	0.16	-0.14	-0.07
	p	0.04	0.09	0.03	0.34	0.42	0.70
	n	42	42	42	35	35	35

Note. Q = during questionnaire assessment; P = during physiological assessment; r_s = Spearman's rank correlation coefficient; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A62

Bivariate Correlations of the Psychometric and Physiological Measures (Intercepts) During Quiet Sitting at Pre-Treatment in the Generalized Anxiety Disorder Group

		Anxiety (Q)	Relaxation (Q)	Worry (Q)	Anxiety (P)	Relaxation (P)	Worry (P)
lat. r. gastroc. EMG	r_s	0.03	0.04	-0.09	-0.33	-0.03	-0.13
	p	0.86	0.78	0.56	**0.04**	0.86	0.44
	n	48	48	48	39	39	39
lat. l. gastroc. EMG	r_s	0.07	-0.08	-0.02	0.04	0.10	-0.06
	p	0.64	0.59	0.87	0.82	0.53	0.72
	n	49	49	49	40	40	40
r. forearm EMG	r_s	-0.15	0.05	-0.18	-0.17	0.01	-0.09
	p	0.31	0.71	0.22	0.28	0.94	0.58
	n	49	49	49	40	40	40
l. forearm EMG	r_s	-0.16	-0.06	-0.15	-0.14	-0.03	-0.13
	p	0.26	0.66	0.31	0.39	0.86	0.43
	n	49	49	49	40	40	40
up. Trap. EMG, ND	r_s	0.04	-0.07	-0.06	-0.23	-0.04	-0.35
	p	0.76	0.66	0.66	0.16	0.80	**0.03**
	n	48	48	48	39	39	39
lat. front. EMG, ND	r_s	-0.08	0.03	-0.05	0.19	0.13	0.12
	p	0.61	0.84	0.75	0.29	0.46	0.51
	n	42	42	42	34	34	34
HR	r_s	0.07	-0.21	-0.04	0.13	-0.22	-0.11
	p	0.64	0.18	0.80	0.45	0.21	0.51
	n	44	44	44	36	36	36
RSA_{TF}	r_s	0.13	0.03	0.18	-0.07	-0.03	-0.01
	p	0.40	0.86	0.24	0.67	0.87	0.94
	n	44	44	44	37	37	37
end-tidal pCO_2	r_s	0.00	0.07	0.12	-0.09	0.39	-0.08
	p	0.98	0.62	0.43	0.59	0.02	0.61
	n	48	48	48	39	39	39
RR	r_s	0.14	0.12	0.03	0.00	0.06	-0.10
	p	0.34	0.39	0.82	0.98	0.72	0.52
	n	49	49	49	40	40	40
RRI	r_s	0.01	0.00	-0.07	-0.20	0.08	-0.05
	p	0.92	0.99	0.61	0.23	0.61	0.76
	n	48	48	48	39	39	39
TV	r_s	-0.41	-0.16	-0.41	0.05	-0.02	0.07
	p	**0.00**	0.29	**0.00**	0.76	0.89	0.67
	n	47	47	47	39	39	39
TVI	r_s	-0.14	-0.14	-0.23	0.17	-0.25	0.05
	p	0.34	0.35	0.12	0.29	0.12	0.74
	n	49	49	49	40	40	40
SCL	r_s	0.04	0.27	-0.01	-0.02	0.37	-0.13
	p	0.80	0.09	0.95	0.90	0.03	0.47
	n	41	41	41	34	34	34
NSF	r_s	-0.27	0.18	-0.33	-0.23	-0.08	-0.23
	p	0.08	0.27	0.04	0.20	0.64	0.19
	n	41	41	41	34	34	34

Note. Q = during questionnaire assessment; P = during physiological assessment; r_s = Spearman's rank correlation coefficient; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A63

Bivariate Correlations of the Psychometric and Physiological Measures (Intercepts) During Relaxation From Pre-to Post-Treatment in the Applied Relaxation Group

		Δ Anxiety (Q)	Δ Relaxation (Q)	Δ Worry (Q)	Δ Anxiety (P)	Δ Relaxation (P)	Δ Worry (P)
Δ lat. r. gastroc. EMG	r_s	-0.23	-0.03	0.04	0.19	0.35	0.40
	p	0.43	0.91	0.90	0.56	0.26	0.19
	n	14	14	14	12	12	12
Δ lat. l. gastroc. EMG	r_s	-0.37	0.35	-0.15	0.31	0.33	-0.03
	p	0.14	0.17	0.57	0.28	0.25	0.91
	n	17	17	17	14	14	14
Δ r. forearm EMG	r_s	-0.67	0.04	-0.13	0.32	0.31	0.09
	p	**0.01**	0.88	0.65	0.32	0.33	0.77
	n	15	15	15	12	12	12
Δ l. forearm EMG	r_s	-0.52	0.32	-0.29	0.24	0.01	-0.36
	p	**0.05**	0.25	0.29	0.46	0.97	0.25
	n	15	15	15	12	12	12
Δ up. trap. EMG, ND	r_s	-0.05	0.16	-0.23	0.15	-0.07	-0.31
	p	0.86	0.56	0.40	0.61	0.81	0.30
	n	15	15	15	13	13	13
Δ lat. front. EMG, ND	r_s	0.04	-0.49	-0.28	-0.55	-0.81	-0.26
	p	0.93	0.21	0.51	0.26	**0.05**	0.62
	n	8	8	8	6	6	6
Δ HR	r_s	-0.07	-0.41	-0.05	0.19	0.51	-0.04
	p	0.80	0.13	0.86	0.55	0.09	0.90
	n	15	15	15	12	12	12
RSA_{TF}	r_s	0.67	-0.42	0.40	0.13	-0.36	0.50
	p	0.01	0.15	0.18	0.71	0.28	0.12
	n	13	13	13	11	11	11
Δ end-tidal pCO_2	r_s	-0.06	-0.10	0.43	0.09	0.73	0.31
	p	0.83	0.72	0.10	0.77	**0.00**	0.30
	n	16	16	16	13	13	13
Δ RR	r_s	0.05	-0.06	0.13	0.13	0.31	-0.13
	p	0.84	0.83	0.63	0.65	0.28	0.65
	n	17	17	17	14	14	14
Δ RRI	r_s	-0.09	-0.05	0.16	0.27	0.02	0.01
	p	0.74	0.86	0.55	0.37	0.94	0.99
	n	16	16	16	13	13	13
Δ TV	r_s	-0.37	0.21	-0.33	-0.23	0.04	-0.14
	p	0.16	0.44	0.21	0.44	0.90	0.65
	n	16	16	16	13	13	13
Δ TVI	r_s	-0.29	-0.10	-0.10	0.14	-0.22	-0.02
	p	0.25	0.70	0.70	0.63	0.44	0.95
	n	17	17	17	14	14	14
Δ SCL	r_s	0.29	-0.48	0.14	0.31	0.19	0.38
	p	0.28	0.06	0.61	0.30	0.53	0.20
	n	16	16	16	13	13	13
Δ NSF	r_s	0.52	-0.13	-0.04	-0.35	-0.33	-0.35
	p	0.04	0.63	0.88	0.24	0.27	0.24
	n	16	16	16	13	13	13

Note. Q = during questionnaire assessment; P = during physiological assessment; r_s = Spearman's rank correlation coefficient; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A64

Bivariate Correlations of the Psychometric and Physiological Measures (Intercepts) During Quiet Sitting From Pre-to Post-Treatment in the Applied Relaxation Group

		Δ Anxiety (Q)	Δ Relaxation (Q)	Δ Worry (Q)	Δ Anxiety (P)	Δ Relaxation (P)	Δ Worry (P)
Δ lat. r. gastroc. EMG	r_s	-0.02	0.06	0.11	-0.03	-0.12	0.13
	p	0.95	0.83	0.68	0.92	0.68	0.66
	n	17	17	17	14	14	14
Δ lat. l. gastroc. EMG	r_s	-0.29	0.31	-0.13	0.48	-0.15	0.03
	p	0.28	0.24	0.64	0.10	0.62	0.91
	n	16	16	16	13	13	13
Δ r. forearm EMG	r_s	-0.03	0.17	0.26	-0.36	-0.25	0.06
	p	0.92	0.55	0.35	0.25	0.43	0.86
	n	15	15	15	12	12	12
Δ l. forearm EMG	r_s	-0.04	0.36	0.00	-0.20	-0.32	0.18
	p	0.87	0.16	0.99	0.50	0.26	0.54
	n	17	17	17	14	14	14
Δ up. trap. EMG, ND	r_s	-0.17	0.02	-0.01	-0.09	-0.56	-0.14
	p	0.53	0.93	0.97	0.77	**0.05**	0.65
	n	16	16	16	13	13	13
Δ lat. front. EMG, ND	r_s	0.38	-0.48	0.02	0.18	-0.50	0.20
	p	0.28	0.16	0.95	0.67	0.21	0.63
	n	10	10	10	8	8	8
Δ HR	r_s	0.05	-0.47	0.03	0.36	-0.21	-0.51
	p	0.85	0.07	0.91	0.23	0.49	0.08
	n	16	16	16	13	13	13
Δ TF-RSA	r_s	0.29	-0.14	0.45	-0.21	-0.09	0.41
	p	0.32	0.63	0.11	0.54	0.80	0.21
	n	14	14	14	11	11	11
Δ end-tidal pCO_2	r_s	0.30	0.18	0.01	-0.32	0.35	-0.04
	p	0.26	0.50	0.96	0.29	0.24	0.91
	n	16	16	16	13	13	13
Δ RR	r_s	0.04	-0.08	0.08	-0.13	-0.36	-0.30
	p	0.88	0.77	0.76	0.67	0.20	0.30
	n	17	17	17	14	14	14
Δ RRI	r_s	0.23	-0.08	0.06	-0.38	-0.18	-0.14
	p	0.37	0.77	0.83	0.18	0.54	0.62
	n	17	17	17	14	14	14
Δ TV	r_s	-0.24	0.09	-0.29	0.26	0.53	-0.22
	p	0.38	0.74	0.28	0.39	0.06	0.47
	n	16	16	16	13	13	13
Δ TVI	r_s	-0.62	0.19	-0.70	0.09	-0.41	-0.42
	p	0.01	0.49	**0.00**	0.77	0.16	0.16
	n	16	16	16	13	13	13
Δ SCL	r_s	0.31	-0.44	0.24	-0.02	-0.06	-0.26
	p	0.25	0.09	0.37	0.94	0.86	0.40
	n	16	16	16	13	13	13
Δ NSF	r_s	0.05	0.33	-0.32	-0.18	0.24	0.17
	p	0.85	0.23	0.24	0.58	0.46	0.61
	n	15	15	15	12	12	12

Note. Q = during questionnaire assessment; P = during physiological assessment; r_s = Spearman's rank correlation coefficient; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A65

Bivariate Correlations of the Psychometric and Physiological Measures (Slopes) During Relaxation From Pre-to Post-Treatment in the Applied Relaxation Group

		Δ Anxiety (Q)	Δ Relaxation (Q)	Δ Worry (Q)	Δ Anxiety (P)	Δ Relaxation (P)	Δ Worry (P)
Δ lat. r. gastroc. EMG	r_s	0.32	-0.09	-0.12	0.27	-0.28	0.57
	p	0.27	0.75	0.67	0.40	0.37	0.05
	n	14	14	14	12	12	12
Δ lat. l. gastroc. EMG	r_s	0.28	-0.31	0.50	0.32	0.07	-0.08
	p	0.27	0.22	**0.04**	0.26	0.81	0.78
	n	17	17	17	14	14	14
Δ r. forearm EMG	r_s	0.02	0.37	0.09	-0.25	0.41	0.01
	p	0.95	0.17	0.75	0.43	0.18	0.98
	n	15	15	15	12	12	12
Δ l. forearm EMG	r_s	0.57	-0.46	0.53	0.52	0.13	-0.23
	p	**0.03**	0.09	**0.04**	0.08	0.70	0.47
	n	15	15	15	12	12	12
Δ up. trap. EMG, ND	r_s	0.27	-0.23	0.29	0.08	0.00	0.09
	p	0.32	0.41	0.29	0.79	1.00	0.77
	n	15	15	15	13	13	13
Δ lat. front. EMG, ND	r_s	-0.49	-0.42	-0.35	-0.14	0.17	-0.03
	p	0.22	0.30	0.40	0.79	0.74	0.95
	n	8	8	8	6	6	6
Δ HR	r_s	0.38	-0.32	0.29	0.40	0.08	0.16
	p	0.17	0.25	0.29	0.20	0.80	0.62
	n	15	15	15	12	12	12
RSA_{TF}	r_s	-0.09	-0.27	0.11	0.37	-0.07	-0.20
	p	0.76	0.38	0.72	0.26	0.85	0.55
	n	13	13	13	11	11	11
Δ end-tidal pCO_2	r_s	-0.23	0.31	-0.07	-0.23	0.41	0.21
	p	0.40	0.24	0.80	0.45	0.17	0.50
	n	16	16	16	13	13	13
Δ RR	r_s	-0.11	-0.03	0.31	0.18	-0.12	-0.02
	p	0.67	0.92	0.22	0.53	0.69	0.95
	n	17	17	17	14	14	14
Δ RRI	r_s	0.36	-0.32	0.40	0.47	-0.01	-0.21
	p	0.17	0.23	0.13	0.11	0.98	0.49
	n	16	16	16	13	13	13
Δ TV	r_s	0.26	-0.18	0.01	-0.25	-0.19	0.40
	p	0.33	0.50	0.98	0.41	0.53	0.17
	n	16	16	16	13	13	13
Δ TVI	r_s	0.10	-0.13	0.25	-0.42	0.17	-0.01
	p	0.71	0.63	0.32	0.13	0.56	0.97
	n	17	17	17	14	14	14
Δ SCL	r_s	-0.46	0.45	-0.36	-0.22	0.42	0.10
	p	0.08	0.08	0.17	0.46	0.15	0.75
	n	16	16	16	13	13	13
Δ NSF	r_s	0.09	-0.24	0.52	0.23	-0.21	0.13
	p	0.74	0.37	0.04	0.46	0.50	0.67
	n	16	16	16	13	13	13

Note. Q = during questionnaire assessment; P = during physiological assessment; r_s = Spearman's rank correlation coefficient; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A66

Bivariate Correlations of the Psychometric and Physiological Measures (Slopes) During Quiet Sitting From Pre-to Post-Treatment in the Applied Relaxation Group

		Δ Anxiety (Q)	Δ Relaxation (Q)	Δ Worry (Q)	Δ Anxiety (P)	Δ Relaxation (P)	Δ Worry (P)
Δ lat. r. gastroc. EMG	r_s	0.32	0.02	-0.19	0.08	-0.15	0.04
	p	0.22	0.93	0.47	0.79	0.61	0.88
	n	17	17	17	14	14	14
Δ lat. l. gastroc. EMG	r_s	-0.41	0.16	-0.46	-0.14	-0.31	-0.10
	p	0.11	0.56	0.07	0.64	0.31	0.74
	n	16	16	16	13	13	13
Δ r. forearm EMG	r_s	-0.26	0.17	0.14	0.36	0.23	0.10
	p	0.36	0.55	0.62	0.26	0.47	0.76
	n	15	15	15	12	12	12
Δ l. forearm EMG	r_s	-0.25	0.20	-0.22	-0.14	0.56	0.00
	p	0.33	0.45	0.39	0.63	**0.04**	1.00
	n	17	17	17	14	14	14
Δ up. trap. EMG, ND	r_s	-0.32	-0.09	-0.04	0.28	-0.49	0.11
	p	0.23	0.73	0.87	0.36	0.09	0.72
	n	16	16	16	13	13	13
Δ lat. front. EMG, ND	r_s	-0.12	-0.03	0.04	0.16	0.12	-0.33
	p	0.73	0.95	0.91	0.70	0.77	0.43
	n	10	10	10	8	8	8
Δ HR	r_s	-0.17	-0.36	0.09	-0.65	0.23	-0.31
	p	0.53	0.17	0.74	0.02	0.45	0.31
	n	16	16	16	13	13	13
Δ TF-RSA	r_s	-0.08	0.58	0.08	0.15	-0.04	-0.05
	p	0.78	0.03	0.79	0.66	0.90	0.87
	n	14	14	14	11	11	11
Δ end-tidal pCO_2	r_s	-0.06	0.54	0.02	-0.13	0.45	0.05
	p	0.84	0.03	0.93	0.68	0.13	0.88
	n	16	16	16	13	13	13
Δ RR	r_s	0.19	0.05	0.15	-0.24	0.18	0.02
	p	0.45	0.85	0.56	0.40	0.54	0.93
	n	17	17	17	14	14	14
Δ RRI	r_s	-0.04	-0.32	0.08	-0.52	0.52	-0.30
	p	0.88	0.21	0.77	0.05	0.06	0.30
	n	17	17	17	14	14	14
Δ TV	r_s	0.25	-0.27	-0.12	0.12	0.30	-0.07
	p	0.36	0.31	0.66	0.70	0.32	0.83
	n	16	16	16	13	13	13
Δ TVI	r_s	0.40	-0.46	-0.01	-0.31	0.19	-0.38
	p	0.12	0.07	0.98	0.30	0.53	0.20
	n	16	16	16	13	13	13
Δ SCL	r_s	-0.21	0.50	-0.30	-0.21	0.45	-0.16
	p	0.45	0.05	0.26	0.49	0.12	0.61
	n	16	16	16	13	13	13
Δ NSF	r_s	-0.26	-0.22	0.02	0.03	-0.12	0.33
	p	0.36	0.42	0.95	0.93	0.72	0.30
	n	15	15	15	12	12	12

Note. Q = during questionnaire assessment; P = during physiological assessment; r_s = Spearman's rank correlation coefficient; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A67

Bivariate Correlations of the Psychometric and Physiological Measures (Intercepts) During Relaxation From Pre-Treatment to Follow-Up in the Applied Relaxation Group

		Δ Anxiety (Q)	Δ Relaxation (Q)	Δ Worry (Q)	Δ Anxiety (P)	Δ Relaxation (P)	Δ Worry (P)
Δ lat. r. gastroc. EMG	r_s	0.37	-0.19	-0.05	-0.01	-0.16	-0.17
	p	0.24	0.56	0.87	0.97	0.66	0.65
	n	12	12	12	10	10	10
Δ lat. l. gastroc. EMG	r_s	0.24	0.02	-0.20	0.10	0.40	0.15
	p	0.40	0.95	0.49	0.75	0.20	0.65
	n	14	14	14	12	12	12
Δ r. forearm EMG	r_s	-0.03	-0.05	-0.38	-0.09	0.27	0.25
	p	0.92	0.88	0.23	0.80	0.45	0.48
	n	12	12	12	10	10	10
Δ l. forearm EMG	r_s	0.60	-0.54	0.30	0.30	-0.14	0.19
	p	**0.03**	0.05	0.32	0.38	0.68	0.57
	n	13	13	13	11	11	11
Δ up. trap. EMG, ND	r_s	-0.28	0.47	-0.40	-0.42	0.52	-0.26
	p	0.38	0.13	0.20	0.20	0.10	0.43
	n	12	12	12	11	11	11
Δ lat. front. EMG, ND	r_s	0.09	-0.31	-0.48	0.09	-0.83	-0.60
	p	0.85	0.50	0.27	0.87	**0.04**	0.21
	n	7	7	7	6	6	6
Δ HR	r_s	0.27	-0.67	0.37	0.59	-0.15	0.87
	p	0.40	0.02	0.24	0.07	0.68	**0.00**
	n	12	12	12	10	10	10
RSA_{TF}	r_s	0.35	-0.30	0.32	0.01	-0.36	-0.03
	p	0.29	0.37	0.33	0.97	0.31	0.93
	n	11	11	11	10	10	10
Δ end-tidal pCO_2	r_s	0.12	0.04	-0.06	-0.01	0.33	0.17
	p	0.69	0.88	0.83	0.98	0.30	0.60
	n	14	14	14	12	12	12
Δ RR	r_s	0.03	-0.39	0.34	-0.04	-0.44	0.03
	p	0.91	0.17	0.24	0.91	0.15	0.93
	n	14	14	14	12	12	12
Δ RRI	r_s	-0.10	-0.20	-0.12	0.03	-0.35	-0.22
	p	0.74	0.51	0.70	0.93	0.30	0.51
	n	13	13	13	11	11	11
Δ TV	r_s	-0.26	0.43	-0.32	0.37	0.11	0.07
	p	0.38	0.14	0.29	0.26	0.75	0.83
	n	13	13	13	11	11	11
Δ TVI	r_s	0.25	-0.02	0.07	0.68	-0.25	0.17
	p	0.38	0.94	0.81	0.02	0.44	0.60
	n	14	14	14	12	12	12
Δ SCL	r_s	0.55	-0.34	0.49	0.03	0.09	0.38
	p	0.05	0.26	0.09	0.94	0.79	0.25
	n	13	13	13	11	11	11
Δ NSF	r_s	0.58	-0.43	0.53	0.33	-0.43	0.20
	p	0.04	0.15	0.06	0.32	0.18	0.56
	n	13	13	13	11	11	11

Note. Q = during questionnaire assessment; P = during physiological assessment; r_s = Spearman's rank correlation coefficient; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A68

Bivariate Correlations of the Psychometric and Physiological Measures (Intercepts) During Quiet Sitting From Pre-Treatment to Follow-Up in the Applied Relaxation Group

		Δ Anxiety (Q)	Δ Relaxation (Q)	Δ Worry (Q)	Δ Anxiety (P)	Δ Relaxation (P)	Δ Worry (P)
Δ lat. r. gastroc. EMG	r_s	0.14	0.05	-0.21	-0.09	-0.35	-0.23
	p	0.62	0.86	0.47	0.79	0.27	0.48
	n	14	14	14	12	12	12
Δ lat. l. gastroc. EMG	r_s	0.22	-0.06	-0.10	0.44	0.33	0.63
	p	0.46	0.83	0.73	0.15	0.29	**0.03**
	n	14	14	14	12	12	12
Δ r. forearm EMG	r_s	0.16	-0.35	0.39	-0.22	-0.47	-0.12
	p	0.61	0.24	0.19	0.52	0.15	0.73
	n	13	13	13	11	11	11
Δ l. forearm EMG	r_s	0.20	0.00	0.38	-0.19	0.23	-0.15
	p	0.49	0.99	0.18	0.55	0.48	0.65
	n	14	14	14	12	12	12
Δ up. trap. EMG, ND	r_s	-0.34	0.18	-0.40	0.06	0.11	-0.40
	p	0.26	0.56	0.17	0.87	0.75	0.22
	n	13	13	13	11	11	11
Δ lat. front. EMG, ND	r_s	0.61	-0.24	-0.17	0.06	-0.60	0.09
	p	0.11	0.57	0.69	0.91	0.21	0.87
	n	8	8	8	6	6	6
Δ HR	r_s	0.24	-0.77	0.52	0.39	-0.22	0.38
	p	0.44	**0.00**	0.07	0.24	0.52	0.25
	n	13	13	13	11	11	11
Δ TF-RSA	r_s	-0.27	0.13	-0.15	-0.06	-0.12	-0.20
	p	0.40	0.69	0.64	0.87	0.75	0.57
	n	12	12	12	10	10	10
Δ end-tidal pCO_2	r_s	0.12	0.09	-0.14	-0.36	0.21	-0.33
	p	0.71	0.77	0.65	0.27	0.55	0.32
	n	13	13	13	11	11	11
Δ RR	r_s	-0.16	0.17	0.05	-0.55	-0.44	-0.69
	p	0.59	0.56	0.86	0.07	0.15	0.01
	n	14	14	14	12	12	12
Δ RRI	r_s	0.19	-0.20	0.47	-0.24	-0.41	0.16
	p	0.53	0.50	0.11	0.48	0.22	0.64
	n	13	13	13	11	11	11
Δ TV	r_s	-0.02	0.26	-0.35	0.40	0.40	-0.03
	p	0.94	0.39	0.25	0.22	0.22	0.93
	n	13	13	13	11	11	11
Δ TVI	r_s	0.23	-0.02	-0.08	0.52	0.21	0.52
	p	0.42	0.95	0.78	0.08	0.51	0.08
	n	14	14	14	12	12	12
Δ SCL	r_s	0.57	-0.35	0.45	0.27	0.08	0.09
	p	0.04	0.25	0.13	0.42	0.81	0.80
	n	13	13	13	11	11	11
Δ NSF	r_s	0.47	0.01	0.10	0.37	0.02	-0.11
	p	0.10	0.97	0.75	0.26	0.95	0.75
	n	13	13	13	11	11	11

Note. Q = during questionnaire assessment; P = during physiological assessment; r_s = Spearman's rank correlation coefficient; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A69

Bivariate Correlations of the Psychometric and Physiological Measures (Slopes) During Relaxation From Pre-Treatment to Follow-Up in the Applied Relaxation Group

		Δ Anxiety (Q)	Δ Relaxation (Q)	Δ Worry (Q)	Δ Anxiety (P)	Δ Relaxation (P)	Δ Worry (P)
Δ lat. r. gastroc. EMG	r_s	0.15	0.01	-0.12	-0.12	-0.01	0.07
	p	0.64	0.97	0.70	0.74	0.99	0.85
	n	12	12	12	10	10	10
Δ lat. l. gastroc. EMG	r_s	0.42	-0.51	0.17	-0.20	0.18	0.22
	p	0.13	0.06	0.56	0.54	0.58	0.49
	n	14	14	14	12	12	12
Δ r. forearm EMG	r_s	-0.23	-0.07	0.14	-0.20	0.26	-0.23
	p	0.47	0.83	0.66	0.57	0.46	0.53
	n	12	12	12	10	10	10
Δ l. forearm EMG	r_s	-0.32	0.20	-0.31	-0.38	0.72	0.57
	p	0.28	0.50	0.30	0.25	**0.01**	0.07
	n	13	13	13	11	11	11
Δ up. trap. EMG, ND	r_s	-0.24	0.08	-0.21	0.00	-0.52	-0.31
	p	0.45	0.81	0.51	1.00	0.10	0.36
	n	12	12	12	11	11	11
Δ lat. front. EMG, ND	r_s	-0.95	0.52	-0.63	-0.84	0.31	0.00
	p	**0.00**	0.23	0.13	**0.04**	0.54	1.00
	n	7	7	7	6	6	6
Δ HR	r_s	-0.20	0.06	-0.12	0.47	-0.13	-0.23
	p	0.54	0.84	0.72	0.17	0.72	0.53
	n	12	12	12	10	10	10
RSA_{TF}	r_s	0.32	-0.36	0.56	-0.31	0.21	0.54
	p	0.33	0.27	0.07	0.38	0.57	0.11
	n	11	11	11	10	10	10
Δ end-tidal pCO_2	r_s	-0.22	0.15	0.08	-0.13	-0.03	-0.03
	p	0.44	0.60	0.80	0.69	0.92	0.93
	n	14	14	14	12	12	12
Δ RR	r_s	0.04	-0.13	0.35	-0.46	-0.21	-0.06
	p	0.90	0.65	0.22	0.13	0.52	0.86
	n	14	14	14	12	12	12
Δ RRI	r_s	-0.18	0.19	-0.16	-0.71	0.04	0.42
	p	0.55	0.54	0.59	0.01	0.90	0.20
	n	13	13	13	11	11	11
Δ TV	r_s	-0.25	0.45	-0.57	0.08	0.18	0.29
	p	0.42	0.13	0.04	0.82	0.59	0.38
	n	13	13	13	11	11	11
Δ TVI	r_s	0.17	0.06	-0.20	-0.21	-0.02	0.40
	p	0.57	0.84	0.49	0.52	0.95	0.20
	n	14	14	14	12	12	12
Δ SCL	r_s	-0.24	0.20	-0.27	0.37	0.15	-0.20
	p	0.43	0.50	0.38	0.26	0.66	0.55
	n	13	13	13	11	11	11
Δ NSF	r_s	0.04	0.03	-0.09	0.33	0.09	-0.37
	p	0.89	0.92	0.76	0.32	0.79	0.27
	n	13	13	13	11	11	11

Note. Q = during questionnaire assessment; P = during physiological assessment; r_s = Spearman's rank correlation coefficient; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.

Table A70

Bivariate Correlations of the Psychometric and Physiological Measures (Slopes) During Quiet Sitting From Pre-Treatment to Follow-Up in the Applied Relaxation Group

		Δ Anxiety (Q)	Δ Relaxation (Q)	Δ Worry (Q)	Δ Anxiety (P)	Δ Relaxation (P)	Δ Worry (P)
Δ lat. r. gastroc. EMG	r_s	-0.08	0.17	0.17	0.20	0.02	-0.23
	p	0.80	0.56	0.57	0.53	0.95	0.46
	n	14	14	14	12	12	12
Δ lat. l. gastroc. EMG	r_s	0.11	0.08	-0.18	-0.47	0.16	-0.13
	p	0.71	0.79	0.55	0.12	0.62	0.69
	n	14	14	14	12	12	12
Δ r. forearm EMG	r_s	0.39	0.06	-0.14	-0.01	0.43	0.29
	p	0.18	0.84	0.64	0.98	0.19	0.38
	n	13	13	13	11	11	11
Δ l. forearm EMG	r_s	-0.06	0.03	-0.17	-0.37	0.73	-0.56
	p	0.84	0.93	0.55	0.23	**0.01**	0.06
	n	14	14	14	12	12	12
Δ up. Trap. EMG, ND	r_s	0.04	0.34	-0.30	-0.40	-0.21	0.14
	p	0.90	0.26	0.32	0.22	0.54	0.69
	n	13	13	13	11	11	11
Δ lat. front. EMG, ND	r_s	-0.12	0.41	-0.37	-0.29	-0.39	0.58
	p	0.77	0.31	0.37	0.58	0.44	0.23
	n	8	8	8	6	6	6
Δ HR	r_s	-0.21	0.50	-0.49	0.02	0.12	0.26
	p	0.48	0.09	0.09	0.96	0.73	0.43
	n	13	13	13	11	11	11
Δ TF-RSA	r_s	-0.49	0.03	-0.31	0.06	0.24	0.38
	p	0.11	0.92	0.33	0.87	0.51	0.28
	n	12	12	12	10	10	10
Δ end-tidal pCO_2	r_s	-0.35	0.38	-0.10	-0.30	-0.04	-0.01
	p	0.23	0.20	0.74	0.37	0.90	0.98
	n	13	13	13	11	11	11
Δ RR	r_s	0.65	-0.39	0.35	-0.14	-0.16	-0.20
	p	0.01	0.17	0.21	0.66	0.62	0.53
	n	14	14	14	12	12	12
Δ RRI	r_s	0.21	-0.18	0.11	0.40	-0.21	-0.11
	p	0.48	0.56	0.72	0.22	0.54	0.76
	n	13	13	13	11	11	11
Δ TV	r_s	-0.39	-0.01	0.11	0.06	0.03	-0.14
	p	0.19	0.98	0.72	0.86	0.93	0.69
	n	13	13	13	11	11	11
Δ TVI	r_s	-0.21	0.32	-0.30	0.24	-0.60	0.44
	p	0.48	0.26	0.29	0.45	0.04	0.15
	n	14	14	14	12	12	12
Δ SCL	r_s	-0.11	-0.02	-0.02	0.53	-0.32	0.04
	p	0.73	0.94	0.95	0.10	0.33	0.91
	n	13	13	13	11	11	11
Δ NSF	r_s	0.35	0.20	-0.20	-0.14	0.06	0.45
	p	0.25	0.52	0.50	0.68	0.87	0.17
	n	13	13	13	11	11	11

Note. Q = during questionnaire assessment; P = during physiological assessment; r_s = Spearman's rank correlation coefficient; EMG = electromyogram; ND = nondominant side; HR = heart rate; RSA_{TF} = transfer-function respiratory sinus arrhythmia; RR = respiratory rate; RRI = respiratory rate instability; TV = Tidal Volume; TVI = tidal volume instability; SCL = skin conductance level; NSF = non-specific fluctuations.